

# The Australasian MANUFACTURER

## SERVING ALL INDUSTRY

Vol. XXXV — No. 1786

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Saturday, June 24, 1950

**HYTEST Working Axes**  
are made from the same  
high-quality forged steel as the  
**HYTEST racing axes** so success-  
ful at the 1950 Sydney Show

At the 1950 Royal Easter Show, crews of **HYTEST AXES** won three-and-a-half Finals—  
12" Underhand Handicap (T. Parker, N.Z.),  
15" Standing Block Handicap (Harold Deaves, N.S.W.),  
15" Underhand Handicap (Bobby Radford, Vic.),  
30" Standing Block Tennis Chop (Len Stephens, N.S.W.), who won this event with his team mate).

In addition, Hytest axes obtained 123 other places in Finals, and were placed in 61 heats and semi-finals. The timber was tough Australian Black Butt, and Hytest Axes put up the best all-round performance of any axe on the ground.

Typical comments were—

Jim Caldwell (Vic.)—"Cut three tough 35" blocks on one day and did not touch the blade with a stone—axe was so thin I was amazed at the performance."

Harold Deaves (N.S.W.)—"Tried all brands—Hytest the best axe."

Albert Lipscombe (Vic.)—"Recommend them to all owners for both soft and hard timber."

Tom Parker (New Zealand)—"Had my Hytest very thin—very secure last for very long. As they are flexible, should be very good working axes, particularly in N.Z. timber—planned to recommend them."



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**TWELVE-INCH UNDERHAND WOODCHOP FINALISTS, ROYAL EASTER SHOW, SYDNEY, 1950.**  
Left to right: (1) Tom Parker (N.Z.), 1st; (2) G.H. Lipscombe (N.S.W.), 2nd; (3) Len Stephens (N.S.W.), 3rd; (4) B. Kirk (identified for 4th)—all used Hytest Axes.  
DATA 17

# AFTER BUSINESS HOURS

## The Machine

(By John Dexter.)

The views expressed in articles published in this section are those of the contributors and not necessarily those of "The Australasian Manufacturer." They are selected for their interest on the subject discussed are always welcomed by the Editor.

**E**VEN in this enlightened age, many people have a deeply-rooted objection to machinery—and even to machine-made goods. Probably the prejudice is due to their innate conservatism.

Man instinctively clings to the old and fears the new. The strange arouses his suspicion and hostility. New ways of doing things, new ideas, new political parties, new philosophies and new machines are generally challenged and often call forth bitter antagonism.

Smoking, when it was first introduced into England, was loudly denounced as a thing of

evil and James the First deemed it his solemn duty to write a book fulminating against it. For years the potato, now the most popular of vegetables, without which no dinner is a dinner at all, was denounced as only fit food for the lower animals. When knives and forks first appeared in England they were ridiculed as an effeminate Italian innovation utterly unworthy of the sturdy character of the British. As late as the 18th century, tea-drinking was regarded by many as a corrupting and dangerous luxury, calculated to corrupt the individual and destroy the race.

Gas, when it was first proposed to use it for the lighting of London, was declared by Sir Walter Scott to be sheer madness likely to end in the blowing up of the greatest city in the world.

No doubt, the opposition to machinery rests on other grounds. When the power loom was introduced into the textile industry in England, thousands were thrown out of employment. Men saw—and felt—the immediate effect of the machines. Their opposition was perfectly natural. They did not see—and nobody can blame them for their blindness—the ultimate effects. The ultimate effects, of course, were important and far-reaching. Instead of reducing employment, the introduction of machinery increased employment as it had never been increased before in the history of mankind.

The population of England and Wales, which for centuries had never reached seven millions, grew in about a hundred years to upwards of thirty millions! The introduction of machinery had resulted, not in reducing employment, but in providing employment for upwards of twenty million men and women who, but for machinery, would never have existed.

And the reason is obvious. Machinery increases production. It, therefore, reduces production costs. And as an inevitable result it reduces prices. But reduced prices increase consumption. More of the machine-made goods are demanded. Accordingly, the machines which at the beginning deprived many of employment, in the end, provided

vastly more employment than ever before.

Here is another example. When the motor car came into being many years ago, it caused the unemployment of tens of thousands of men engaged in waggon factories, buggy factories, and livery stables. But to-day the motor car is providing employment—and better-paid employment—for many millions of men.

Again, when Gutenberg invented movable type in the middle of the 15th century, he, no doubt, threw out of employment hundreds of men who had earned their livelihood, not by printing books, but of copying them—copying them letter by letter. But Gutenberg's invention eventually provided work for millions of men in the printing of millions of books, magazines, and newspapers, enabling the humblest worker to-day to be as well informed as kings and emperors were five hundred years ago.

It is no exaggeration to declare that the printing press is the greatest machine ever invented by man. It has worked almost magical results on the lives and minds of men. It has made it possible for the humblest to read and appreciate the great thoughts of the great thinkers of ancient and modern times, and has proved beyond all cavil that high intellectuality is confined to no class and that the poor—who once upon a time were regarded as inferior creatures—can hold their own against all comers. Some of our greatest men of letters and some of our greatest scientists—for example,



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OTLJHP

William Shakespeare and Albert Einstein—have sprung from the humbler classes.

Machinery may not have done all the good it is capable of doing. But it has done wonders. Glance for one moment at the English pottery industry as it existed about a hundred years ago. Children in the potteries—which children were known as jiggers and mould-runners—were frequently only seven years of age. The jigger had to turn a horizontal wheel, and the mould-runner had to carry the wares from the wheeler to the hot-house and moulds. It is estimated that the mould-runner—who worked seventy-two hours a week—must have walked over seven miles a day carrying three thousand eight hundred and fifty pounds, besides mounting steps. And all this, be it remembered, in temperature varying from 100 to 130 degrees. The child received for this service the astounding sum of fourpence per day!

Machinery has rendered that sort of thing impossible by making it forever unnecessary. I doubt if we are more humane to-day than we were a hundred years ago. If we do not set little children to work of that kind, it is because we have discovered a cheaper way of getting it done. We have lifted the burden of labour from the tender backs of our children, not because we are better men, but because science and invention have taught us how to get a better and a cheaper service from the unconscious and

unsuffering forces of the physical universe. It is not for us to sneer at our ancestors for the cruelties they permitted, but rather to render our thanks to the great investigators and inventors who have shown us how to produce wealth without inflicting pain—how to make the machine the obedient servant of man.

In a remarkably able book entitled "Atoms, Men, and Stars", Roger D. Rusk, Ph.D., makes the following eloquent and arresting statement: "Power in ancient times was obtained by multiplying the number of slaves, but power in the modern age has been obtained by putting atoms and molecules to work. The invention of the steam engine was quickly followed by the invention of the internal combustion engine, and in its high development in the present-day automobile motor we see that gas molecules have become the slaves of to-day. Trillions upon trillions of these molecules push on the piston of every cylinder in an automobile engine and as we drive gaily along we are not only cushioned from the ground by air molecules in the tyres, but are pushed along by the molecular bombardment of the gaseous products of combustion in the motor. The average person of to-day who bemoans the high cost of living, actually controls the power-equivalent of something like seven million slaves in his automobile, to say nothing of many more in his refrigerator, electric

elevator, steam locomotive, electric train, and even in his radio and telephone. The concentrated output of our modern power stations far surpasses, in equivalent, slave-power the wildest dreams of any inebriate ruler of old. And a single turbo-generator may more than equal a half million slave-power."

The importance of the machine was never more strikingly and eloquently expressed. In the deepest sense, it is, perhaps, man's greatest triumph. It has in countless ways increased the power, advanced the interests, and promoted the happiness of mankind. It gives man leisure—one of the greatest of all good gifts. For adequate leisure is the nurse-bed of culture, and culture is the soil from which alone can spring the immortal creations of Art—the imperishable flowers of the spirit.

## Open Mind

### LETTERS TO THE EDITOR.

The Editor,

Dear Sir,—It was with interest that I read your article in a recent issue of "The Australasian Manufacturer", dealing with the idea of holding an Industrial Fair during the year 1952.

This article was more than interesting to me, as I am connected with a group of engineers who have formed a Board of Management for the purpose of holding a Mechanical Exhibition

in Melbourne from the 12th to 21st October, 1950, at the Exhibition Buildings. This is to be known as the 20th Century Mechanical Exhibition. It will be an Exhibition of up to the minute importance, as it will house the latest in all mechanical products, while the main interest in the Exhibition will be that of working exhibits, as most exhibits in this case will be working.

In promoting this Exhibition, it was felt that it would be something of an education for the younger generation as well as to all other ages.

Australia is a country which is capable of producing the best of goods, and an Exhibition such as this is really needed if the manufacturer is to gain from his efforts, and if the public is to be able to view the production of such goods to the very best advantage.

The Exhibition's cinema will be available to exhibitors, as special arrangements have been made to assist exhibitors who have films.

So, Sir, your article is most timely. May I congratulate you on it, and at the same time I would like to commend to you the 20th Century Mechanical Exhibition. I do look forward to your interest in same.

Wishing your publication continued success,

I am,

Yours faithfully,

**WILLIAM DARWIN, F.R.G.S.**  
(Chairman),  
20th Century Mechanical  
Exhibition.

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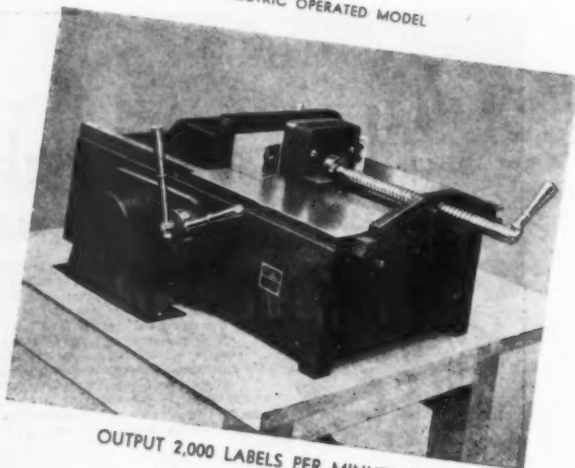
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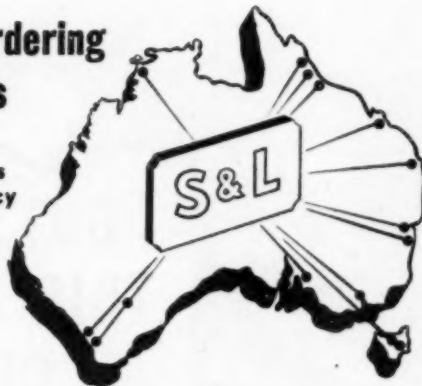
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|---------------------|------------------|----------|--------------------------|--------------------|-------------------|
| 1                   | 450              | 450      | Allen/E.C.C.             | 140lb.             | 18lb.             |
| 3                   | 500              | 440      | Allen/Crompton Parkinson | 284lb.             | 30lb.             |
| 4                   | 600              | 400/440  | Weir/E.E.C.              | 160lb.             | 18lb.             |
| 1                   | 700              | 440      | Allen/Crompton Parkinson | 294lb.             | 30lb.             |

NOTE: For customers who operate on standard voltage of 220 volt, 3 phase, 50 cycles, the three 500 kW., the 700 kW., and the 1,000 kW. Turbo Sets can be re-connected without extra cost for operation at this voltage.

### Reciprocating Sets

| No. Avail-<br>able. | Output<br>in kW. | Voltage. | Maker's Name.          | Steam<br>Pressure. | Back<br>Pressure. |
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| 1                   | 750              | 400/440  | Browett Lindley/G.E.C. | 135/150lb.         | 18lb.             |

NOTE: The above complete with usual auxiliaries for the Turbines and Engines, including the stop valve, gauges, interconnecting pipe work and oil coolers; the switchgear for the Turbo Alternator Sets suitable for controlling them running in parallel is also included.

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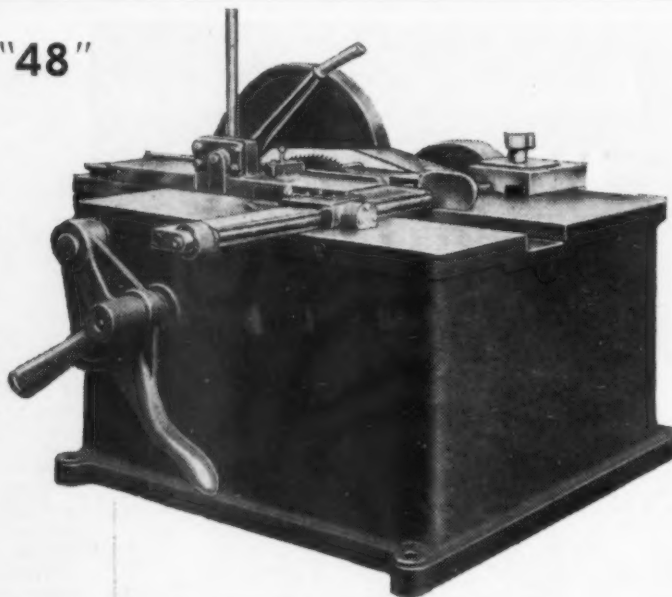
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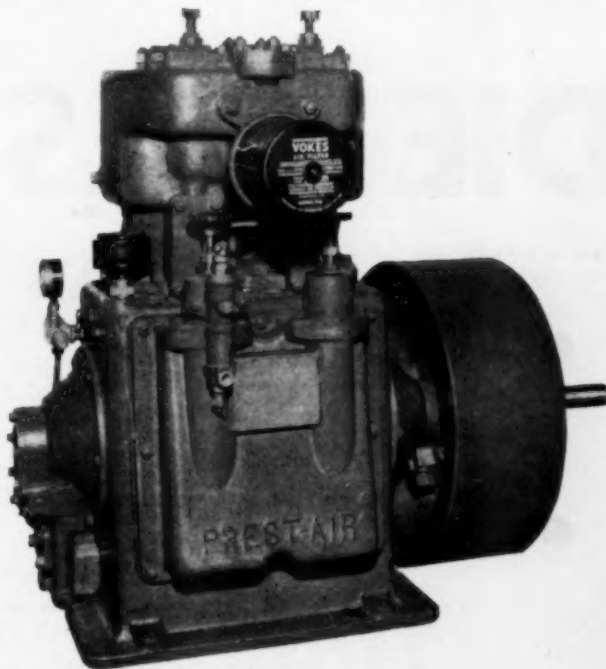
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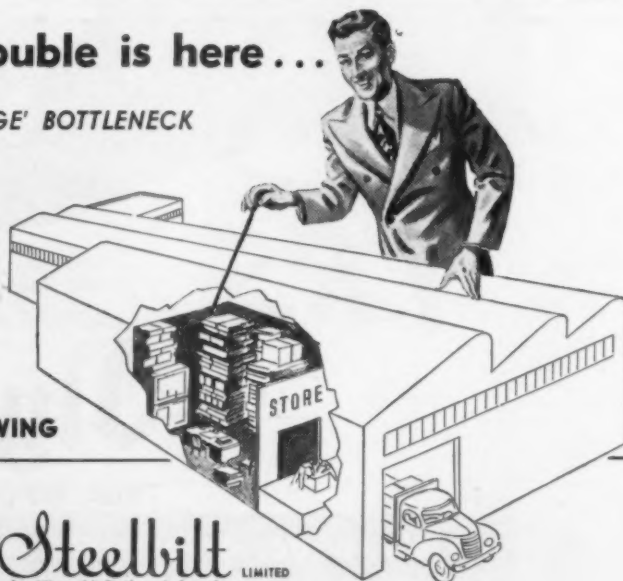
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Full of typical installations of Timken tapered-roller bearings in typical machines, this booklet has been found useful by many designers.

BRITISH TIMKEN LTD., Duxton, Northampton and Birmingham 7, England. (Subsidiary Company: Fischer Bearings Co. Ltd., Wolverhampton, England.)

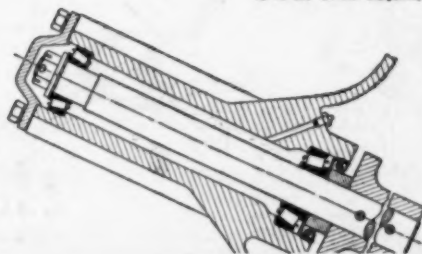
### AUSTRALASIAN INDUSTRIAL DISTRIBUTORS:

MELBOURNE, Victoria: Bearing Service Co. of Aust. Pty. Ltd., 223 Queen St., P.O. Box 3871.  
SYDNEY, New South Wales: Bearing Service Co. of Aust. Pty. Ltd., 88 Wentworth Ave., BRISBANE, Queensland: Bearing Service Co. of Aust. Pty. Ltd., 220-221 Adelaide St., Box 2220.

G.P.O. ADELAIDE, South Australia: Duncan & Co. Ltd., 107-109 Pirie St. PERTH, Western Australia: Bearing Service Co. of Australia Pty. Ltd., 500 Hay St. NEW ZEALAND: Jas. J. Niven & Co. Ltd., 65-71 Taranaki St., P.O. Box 1009, Wellington.

## Concrete Mixer

Extract from one of the pages: Two Timken tapered-roller bearings carry all the radial, tilting and thrust loads, and their installation is of the utmost simplicity.



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PREVIOUSLY IMPORTED FITTINGS NOW  
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Made in our Australian factory on Australian developed machines and employing all Australian material, "Trimount" Clips are already being used by many industries. These time-saving fasteners take the place of screwed-on clips for holding tubes and wires to their supporting structures.

"Trimount" Clips are economical, quickly attached and permanent. Every clip is rust-proof and will keep on doing a good job.

25 types of "Trimount" Clips are now available. Others will be added as required by manufacturers.

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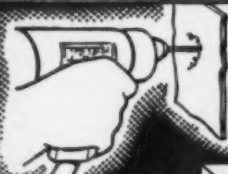
Enquiries are invited from all trades requiring serviceable clips in modern design. Such enquiries should be addressed to the Company's Sales Engineers in Adelaide, Sydney or Melbourne.

IN SYDNEY: Mr. S. B. Tonkin, 85 Commonwealth Street.

IN MELBOURNE: Mr. C. A. Muller, 355 William Street.

IN ADELAIDE: Carr Fastener Co. of Australia Limited,  
Royal Park, Alberton 1, S.A.  
Telegraphic Address: "Carrfast," Adelaide

• INSTANTANEOUS • RATTLE-PROOF  
• ONE PART • NO TOOLS REQUIRED  
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DRILL OR PUNCH HOLE



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SNAP IN TUBING



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Australia's National Manufacturers' Newspaper circulating in all States, New Zealand and Overseas. A weekly newspaper devoted to industrial efficiency and the manufacturing progress of Australia. Subscriptions within Australia and New Zealand (including Annual Number), £1/10/-; Great Britain and Possessions, £2; Foreign, £2/10/-. All subscriptions payable in advance.



PAGE FIFTEEN JUNE 24, 1950.

## "Manufacturer's" Annual Makes History Publicises Record Achievements in Industrial Field

The new issue of "The Manufacturer's" Annual now available writes a new chapter in the industrial history of this nation, abounding as it does in facts and figures which acclaim to the world the amazing developments taking place throughout the whole sphere of Australian manufacture. It records the vast national schemes planned or in process of implementation, schemes calculated to have a vital bearing on every department of the economy. It records the establishment of new undertakings. It details the directions in which expansion of existing enterprises is taking place. A number of executives of the nation's leading industries report on developments in their respective fields—stressing the difficulties likely to be encountered and pointing the way to their overcoming; enumerating the forward steps which have been taken or which are planned; suggesting the fields which promise the richest harvest. The chiefs of Governments, headed by the Prime Minister, the Rt. Hon. R. G. Menzies, indicate the plans they have in mind for the furtherance of manufacturing within this Commonwealth.

THE vast publication constitutes, so to speak, an Australian Industrial Encyclopaedia. Every facet of the nation's manufacturing life is dealt with either briefly or in detail. Every question impinging on the manufacturing economy is discussed freely and fearlessly.

For example, in his Foreword, the Prime Minister not only commends manufacturers for their achievements to date, but also reminds them of their responsibility in the matter of production costs. "The Australian Manufacturer", he declares, "has a great part to play in Australian development. The opening up of national resources and the building up of industries need team-work. We must all play in the team if we are to be good and true Australians. In a team, each helps all the others, and is in turn helped by them. Manufacturing in Australia has long passed the experimental stage. It is one of the great elements in our economic life. It deserves our help, by tariffs and otherwise, so that Australia may become a large supplier of manufactured goods, not only to herself, but to the markets of the world. But Australian manufacturing has also national duties. It must watch its costs and its efficiency, bearing in mind that the purpose of a tariff is to guarantee employment and fair competition, not to create monopolies. I know that the Annual Number of 'The Australasian Manufacturer' never loses sight of this. Nevertheless I venture to repeat it, to say how much I wish for the day when the products of our factories are as much demanded as are the products of our farms and stations; and to remind everybody concerned that in the securing of a market in another country, quality, price, and consistency of sound delivery are the conditions of success."

Unquestionably one of the Annual's most arresting contributions is from the pen of the Rt. Hon. R. G. Casey, Minister for National

Development. "Execution of a vast development plan aimed at changing the whole economic pattern of this country within a generation," he says, "is the over-riding objective with which Australia enters upon the second half of this crucial century. Based on systematic widespread exploitation of Australia's great natural resources, the plan calls for public and private investment on a scale never previously envisaged. Our vision of Australia is a nation supporting double its present population within thirty years, producing an abundance of the necessities of modern civilisation and contributing its full share to the prosperity and progress of her Asian neighbours. This is not a prospect which we can afford to regard either as a luxury, a political plaything, or merely as an artificial stimulant for temporary prosperity. For Australia, national development on a scale very much greater than we have ever contemplated in the past is a necessity which will determine in the next ten or twenty years our right to continue to occupy three million square miles of coveted territory in a troubled world." Mr. Casey then proceeds to enumerate some of the plans his Government has in mind for the attainment of this lofty objective, emphasising the part private initiative is destined to play. He concludes on this striking note: "One of the greatest necessities for Australia is the revival of incentive, and risk-taking. We must release the energy, imagination, and creative force in those who have the capacity and the courage to take advantage of the opportunities offered in this young and potentially great country."

The Premiers of each of the States record in able and lucid fashion the manufacturing developments which continue to characterise their respective territories, these details being supplemented by the State Presidents of the Chambers of Manufacturers.

# DETEL



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**ACIDS + ALKALIES + SEA WATER**

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Industrialists in the whole British Commonwealth, as well as Australia's friends in the United States, will read with interest of the establishment of her first University of Technology, the story being told by its first Director, Mr. A. Denning, B.Sc., Dip.Ed., A.S.T.C.

"Foundry Developments in Australia" are discussed by Mr. H. K. Spencer, A.S.T.C., B.Ec., Councillor, N.S.W. Branch, Institute of Australian Foundrymen; Mr. G. Mak, Electronic Engineer, Philips Electrical Industries of Aust. Pty. Ltd., reports on "Electronics in Industry"; Mr. L. G. Harrison, director, A. S. Harrison and Co. Pty. Ltd., Melbourne and Sydney, records "Developments in Plastics To-day and To-morrow"; while Mr. K. Leigh, President of the Melbourne (Australia) Branch of the American Electroplaters' Society, makes an important contribution on "The Science of Electroplating."

These are merely a few of the major contributions, contributions which, in their entirety, cover the entire manufacturing scene, their interest and importance resting on the fact that they are written by men

with a deep knowledge and a wide experience of the issues individually discussed.

During the coming weeks, this latest issue of the Annual will be setting forth on its historic task, the task of acquainting the people of this country, and of all the leading countries in Europe, America, and Asia, concerning the production feats being wrought in the factories and workshops of this virile young land in the Southern Seas. Indeed, the publication has come to be held in such high esteem both at home and abroad that its publishers have decided to produce a number of copies with a hard cover, in addition to the usual 4-col. cover on art paper. This will give the Annual a permanence and a solidity that will be appreciated by libraries and by the industrial organisations which desire to have it available for both frequent and permanent consultation. This will constitute a strictly limited "de luxe" edition. Copies will come forward at a slightly enhanced figure. Because of the limited character of the edition, early application for copies is imperatively necessary.

## Pithy Jottings of Industry and Industrialists

### GLUE AGENCY FOR A. S. HARRISON & CO.

A. S. Harrison & Co. Pty. Ltd. have been appointed agents for British Glues & Chemicals Ltd. of England, described as the largest manufacturer of glues in the British Empire.

Mr. F. D. Jenkins, an executive of the English company, has been surveying the field in Australia for their high grade glues.

For the last twenty years the company has specialised in the

manufacture of Pearl Glues, and are now offering some particularly interesting new qualities.

### GONINAN'S CONTRACT.

In these columns in our issue of June 10 an incorrect figure was quoted in our report of a contract, secured by A. Goninan & Co. Ltd. against world competition, for the manufacture of 1,800 bogie coal hopper waggons.

Their successful tender to the State Government Railways was £2,771,200.

The figure quoted in our earlier report—£8,000,000—was the sum of several accepted tenders by Goninan; including waggons for the Railways Department, and the supply, fabrication and erection of the steelwork for the first building of Courtauld's rayon factory at Tomago, N.S.W.

### GOODYEAR EXPANSION PROGRAMME.

Mr. H. C. Steiner, Managing Director of The Goodyear Tyre & Rubber Company (Australia) Limited, announced recently that in order to cope with the increased demand for the Company's products, a further expansion

programme has been approved which will substantially increase the Company's productive capacity.

Plans have already been prepared and orders are being placed immediately for the necessary buildings and equipment, and when the programme is completed and the plant operating to full capacity, employment will be provided for at least 500 additional employees.

### TARIFF BOARD INQUIRIES.

The Minister for Trade and Customs has referred four new matters to the Tariff Board for inquiry and report in accordance with the Tariff Board Act, 1921-1947:—(1) Covered Cable and Covered Wire:—What rates of duty should be imposed on Covered Cable and Covered Wire classifiable under Tariff Item 181(A)(1)(a). (2) Torch Cases:—What rates of duty should be imposed on Torch Cases imported into the Commonwealth of Australia. (3) Universal Milling Machines:—What rates of duty should be imposed on Universal Milling Machines which are now charged with duty under Tariff

Item 174(M)(29), and (4) Felt Polishing Bobs:—(a) Whether felt bobs (or wheels) should be removed from the provisions of entry under Tariff Item 449(A)(1); (b) What rates of duty should be imposed on felt bobs (or wheels) if such be removed from the provisions of entry under Tariff Item 449(A)(1).

These matters will form the subjects of public inquiries at a later date.

### MANUFACTURERS' OPPOSE INTERNATIONAL TRADE ORGANISATION.

A deputation representing the Associated Chambers of Manufacturers this week asked the Commonwealth Government to withdraw Australia from the International Trade Organisation. The deputation saw the Prime Minister (Mr. Menzies) and the Minister for Trade and Customs (Senator O'Sullivan).

Member nations of the organisation will meet in Britain next month to consider extending the Geneva trade agreement until 1954.

The director of the Associated Chambers of Manufacturers (Mr.

### ENGINEERING EXECUTIVE WANTS POSITION

Member of the Institution of Mechanical Engineers, 48 years of age, is available for engagement in a senior position. Experience in I.C. engines, pumping and metering equipment. Over 18 years in administrative positions concerned with Factory Management, Production Planning, Personnel and Sales.

Write: "ENGINEERING EXECUTIVE," c/o "The Australasian Manufacturer," Box 1687, G.P.O., Sydney.

L. Withall) said that the I.T.O. was reacting to the disadvantage of Australian industry. Australia could make better terms with other trading countries by bi-lateral agreements.

#### PRODUCTION OF PLASTIC BUTTONS.

Mr. Marshall Ney, managing director of G. Herring (Aust.) Pty. Ltd., who recently returned to Australia after a six months' visit to America, England and the Continent, stated that his Company was shortly to receive from England an entirely new button plant for the manufacture of high fashion buttons in gold and silver.

"This equipment," he said, "will be the latest in the world and will make it possible for us to produce buttons equal to anything produced in America or England. Arrangements are to be made for the newest designs from New York, Paris and London to be flown to Australia and re-produced here under Australian conditions."

"The buttons will be sold here at a far lower rate than similar articles in America. Our production methods will be the same as the American but our costs will be considerably lower."

#### INDUSTRIALISTS OPPOSE REVALUATION.

In a press statement issued this week the Metal Trades Employers Association said that revaluation of the Australian pound would disastrously affect Australian industry.

The Association claimed that the exchange rate between Australian and sterling pounds was an integral part of Australian tariff protection.

Tariff rates were based on present exchange rates, and an appreciation of the Australian pound would be the equivalent of a drastic cut in tariff protection.

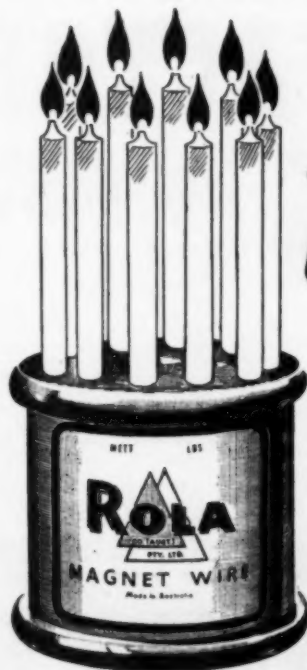
The Association suggested that danger to secondary industry could be averted if the effects of exchange adjustments were simultaneously offset by an increase in tariff rates.

#### QUEENSLAND FACTORY FOR CYCLONE CO.

A factory estimated to cost £100,000 is to be constructed at Geebung, Queensland, by the Cyclone Co. of Australia Ltd. The existing plant at Rocklea is to be dismantled and transferred to the new location. When in production, the enterprise will employ upwards of 150 workers who will produce stockproof and ornamental fencing, gates, rail guards, playground equipment, wrought iron, and tubular steel products.

#### APPOINTED DIRECTOR— J. W. LAWTON & SONS LTD.

Mr. S. A. Willmott has been appointed a director of J. A. Lawton & Sons Ltd. Mr. Willmott is managing director of Lawton Industrial Trucks Ltd.



*We Celebrate  
a 10th Birthday*

This year makes a decade in the history of a new Australian industry — the manufacture of Magnet Winding Wires — which was pioneered by Rola Co. (Aust.) Pty. Ltd. in 1940, when, to forestall

potential war-time shortages in the Australian Electrical Industry, it installed the first units of a modern wire-making plant.

Despite the claims by some local experts, repeated at a 1941 Tariff Board enquiry, that the manufacture of Magnet Winding Wires in Australia was uneconomic, the new enterprise was a success from the start.

To date, more than 12,000,000 pounds of Rola Magnet Winding Wires have been supplied to Australian radio and electrical manufacturers and the Company is still pioneering new developments in magnet wire techniques.

Most important of all, this new Australian industry has become firmly established — there are now three independent manufacturers of Magnet Winding Wires in the Commonwealth — and Australia has made another important step on the road to self-sufficiency.



**ROLA CO. (AUST.) PTY. LTD., The Boulevard**

RICHMOND, VIC., and 116 CLARENCE, STREET, SYDNEY

Our editorial representative in each State makes regular calls on manufacturers, but if YOU wish to see some particular phase of your business given publicity, communicate immediately with the Editor, and he will arrange for a representative to call.



# Around & About the FACTORY



A digest of new factory and plant construction, additions, alterations and improvements, and operating news of Australian industry.

## Portable Compressor Unit

### Eliminates Long Air Lines

With so many large compressed air plants available for installation in factories, garages and workshops which require considerable capital outlay, the need has often been felt for a low-priced portable unit of sufficiently sturdy construction to handle the hundred and one jobs which confront the handyman or small operator.

Such an outfit is the JK Compressor Unit No. 1, which is light

fluids on any surface or article within reach of a power point. Long electric cords, unlike air lines, do not affect efficiency in any way.

Consisting of a single stage compressor, an air receiver or tank, and a 1 h.p. motor to run at 1400 to 1440 r.p.m., the outfit is mounted on a wooden base 19in. x 10in. with a centrally situated carrying handle. If the unit is to be used for industrial purposes a ½ h.p. 3-

with a baffle plate to eliminate loss of oil.

The piston is precision ground and fitted with two ½in. rings and the connecting rod is fitted with a ball bearing in the big end to ensure long trouble-free life. The small end has a self-lubricating bearing and splash-type lubrication is incorporated.

The crank disc is machined from a phosphor bronze casting. Special attention has been paid to the connecting rod and crank disc to ensure perfect balance and the elimination of the irritating knock so common to compressors.

## Production Control with "Multinex"

New Machine Distributed by  
Fordigraph Company  
(Australia)

Every section of to-day's manufacturing world is in urgent need of efficient aids to high output and low costs. The capable executive, accordingly, keeps a keen look-out for the coming on to the market of any such aids: studies their special features; and examines their capacity to fill his specific needs. Indeed, it may be no exaggeration to say that keeping himself acquainted with the newest production aids is one of his major responsibilities.

Unquestionably one of the surest ways of discharging this responsibility is to study the pages of technical journals, the journals which keep the industrial world fully abreast of the latest developments.

In recent issues, for example, "The Manufacturer" has illustrated and described one such important newcomer into this special field. This is the "Multinex", a new machine being marketed by Fordigraph Company (Australia), whose head office is at 125 George Street, Sydney.

The new Fordigraph "Multinex" has virtually revolutionized production control. For it uses only one typed or written original to produce all cards and forms necessary for the production control system—production orders, job labels, material requisitions, job cards, cards for receiving into store, and cards for despatch. Without disturbing the original, the mechanism produces complete production order copies. It then proceeds to perform line-selection work, producing individual control cards and forms. Obviously, this eliminates re-typing, re-writing, and re-checking.

Nor is that the whole story. Without stencils, without inks, and without gelatine, the "Multinex" will produce, without error, specific information on any or all cards, with the added advantage

(Turn to page 20.)



(Left): JK Compressor Unit No. 1, inflating car tyre. (Right): Unit with spray gun.

enough to be carried wherever there is work to be done, but sufficiently robust for use with duco spray guns, for cleaning swarf from lugs and machines, for tyre inflation, outdoor spray painting, and so on.

Even in factories and workshops where heavy demands on compressed air necessitate the installation of large stationary plants with static air lines, there are many hard-to-get-at jobs which can be done more easily and economically with the JK without the need for long air lines which absorb power by friction and which tend to perish or develop leaks at the joints even when used infrequently.

Used with its specially designed spray gun, the JK Compressor Unit will spray lacquer, enamels, varnishes, disinfectants, insecticides, water colours, dyes and other

phase motor (or larger if required) is available which gives power to spare while retaining the essential feature of portability.

Designed for years of service, the JK Compressor Unit No. 1 is made up of interchangeable parts for which replacements are available at all times.

The Compressor has a bore of 1½in., stroke 1½in. and displacement of 1½ cub. ft. per min. when running at 960 r.p.m. The body, crankcase cover, and piston are machined to fine tolerances from special alloy castings, while the body is fitted with a honed steel sleeve to ensure long life and smooth running.

The cylinder head is fitted with two inlet and one outlet valve specially designed for the compressor, and the crankcase cover has three breather holes and is fitted

The safety valve on the air receiver is used in conjunction with the gauge and may be set at any required pressure up to 90 lbs. per square inch when the valve automatically blows. The pressure gauge is marked in 1 lb. graduations from 0-100 lbs. and is 2½in. in diameter.

Of special interest to cabinet makers, repairmen, factory owners, handymen, etc., the JK Compressor Unit No. 1 has four rubber buffers fitted to eliminate vibration. Alternatively, it may also be used in conjunction with the other JK Power Hobby Tools, either from the line-shaft or direct from the motor in which case it will, of course, lose its portability.

Full details are available on request from Mark Clifford Pty. Limited, 11 Albert Street, Brunswick, N.10, Victoria.



Write for our illustrated folder or call in for a personal demonstration

FY-0-HH

Full particulars may be obtained from the Engineer, Wanganui-Rangitikei Electric-power Board, P.O. Box 11, Wanganui, New Zealand.



**FIGURE NO 741**

**JOHN "J DISC" GLOBE VALVE**  
For Saturated STEAM  
at 150 lbs. per sq. inch  
and WATER, OIL or AIR  
at 250 lbs. per sq. inch.



**JOHN**

**M.B. JOHN LIMITED**  
BALLARAT - VICTORIA  
AUSTRALIA

TRADE  MARK

MAKERS OF THE LARGEST RANGE OF  
VALVES AND FITTINGS IN AUSTRALIA

ILLUSTRATED above is one of the large range of JOHN Valves and Fittings for use with STEAM, WATER, OIL, CHEMICAL, AIR and GAS Services of high, medium or low pressures and temperatures.

FULL PARTICULARS supplied on request

of doing this work in distinctive colours. Naturally, this means quick reference and easy identification.

The mechanism is also characterised by flexibility and simplicity. It is so flexible, for example, that it can be adapted admirably to meet practically all individual requirements, and it is so simple that a person of average intelligence can become a proficient operator in the space of a few days. The fact, moreover, that it is electrically operated spells the minimum of strain and fatigue under continuous working conditions.

It is evident, therefore, that the "Multitex" makes possible a newer and a higher standard in production control. It does this by guaranteeing speed and accuracy in all plant operations; by eliminating the error factor, and by obviating re-typing and re-checking. It constitutes, in short, an effective time and labour saver.

The Fordigraph organisation will be pleased to arrange demonstrations to interested industrialists. This may be done at their Sydney office, at their Melbourne office, 108 Queen Street; or at their sales and service agencies in South Australia, Queensland, and Western Australia.

## New "Scope" Soldering Iron

### Smaller Model for Very Delicate Work

Continuation of the research and development behind the production of the "Scope" 6-second soldering iron which was discussed in these columns a few weeks ago has resulted in a smaller model which is electrically the same as the larger

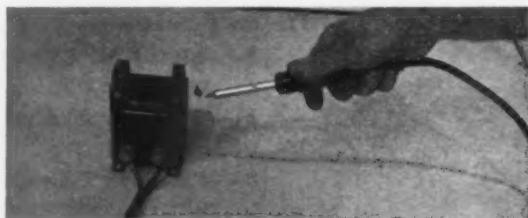
iron but is lighter and has a shorter shank to give better contact in delicate work and in which the copper tip is much smaller.

This iron, as with the larger model, is normally in the "off" position, and by moving a ring

forward on the iron handle it is ready for continuous operation with a delay of only six seconds when operated from a 4-volt accumulator or the special step-down transformer optionally supplied.

placing them with others as required, at the cost of only a few pence.

Distribution of "Scope" soldering irons is in the hands of Wm. J. McLellan & Co., 55 York Street.



Better control in delicate work is obtained with this new model "Scope" iron.

If used on a 6-volt transformer or accumulator, the heating-up time is reduced to four seconds.

Although weighing only 2½ ozs., this iron, it is claimed, has the effectiveness of conventional irons up to 150 watts. Repairs are effected to the iron by simply screwing out the tip or element and re-

Sydney to whom all enquiries should be addressed.

## New Sealing and Caulking Compound

"Stormseal" has been chosen as the trade name for the highly ef-

# The 1st. name in Steel Equipment



**E. T. BROWN LTD., Brownbuilt Steel Equipment Co. (Regd.)**  
14-24 Alexandra Parade, Clifton Hill, Victoria  
87 Castlereagh Street, Sydney, N.S.W.  
Representatives in all other States  
**MANUFACTURING AT SYDNEY & MELBOURNE**

**HARD CHROME PLATING**  
for Building Up  
**DIES, GAUGES, SHAFTS**

**Woodward & Thurston Pty. Ltd.**  
208 St. John's Road, GLEBE  
SYDNEY, N.S.W.  
Phone: MW 2571 (2 Lines).

efficient caulking and sealing compound recently developed by the research staff of Ormiston Rubber Co. Proprietary Limited of 529-535 Mount Alexander Road, Moonee Ponds, Victoria.

Produced primarily to fill the needs of the motor body building industry for a flexible, non-hardening sealing compound easy to clean off outside surfaces, "Stormseal" is absolutely waterproof, and has emerged with flying colours from two years of exhaustive field tests by major motor interests.

"Stormseal" has many uses outside of the motor industry such as caulking leaking window frames, sky-lights, roof flashings, cracked masonry, tiles, etc. When used for boats it is the ideal compound for caulking decks and portholes and may be used with hemp fillers for this purpose.

Used exclusively by a number of motor body builders in the construction of bodies for city buses, cars and panel vans, "Stormseal" is equally effective for the home user for stopping up leaks in the roofs of cars and for general use about buildings.

Supplied in pint, quart, and one gallon tins to cover the full range of private and industrial uses, "Stormseal" provides a fitting companion product to P.C. 49 (Perfection Cement) which has been established on the market for so many years.

While P.C. 49 has been used quite satisfactorily as a sealing compound for some years, the very ruggedness and tenacity for which this elastic cement is famous has in itself presented some difficulties when it is used for sealing and caulking, owing to the labour necessary to clean off excess cement from outside surfaces.

Where this difficulty has been experienced "Stormseal" supplies the immediate answer, permitting P.C. 49 to revert to its allotted "beat" of bonding agent for sticking together almost any known like or unlike surfaces.

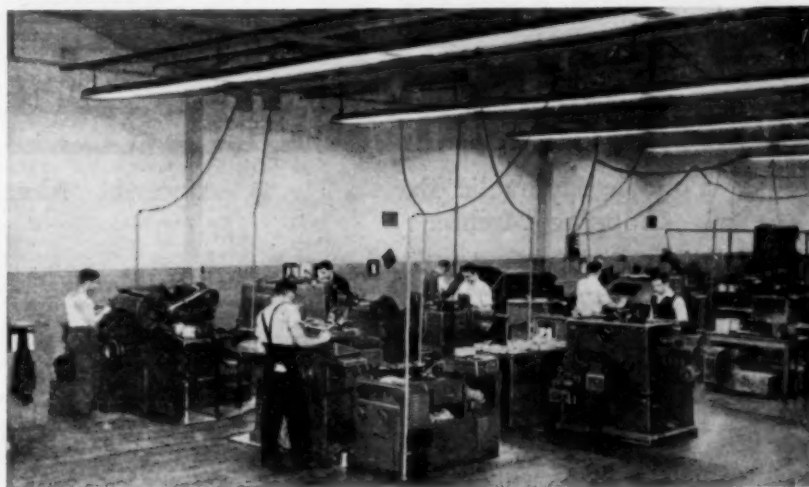
**MACROBERTSON BECOMES  
PUBLIC COMPANY.**

The 70-year-old confectionery industry of MacRobertson (Australia) Ltd., Melbourne, recently registered as a public company with an authorised capital of £3,000,000. The products of this company, which had the humblest of humble beginnings, rank today with the very finest produced in any part of the world.

**"TOOL UP"**

**YOUR MACHINE SHOP WITH . . .**

**HIGH LEVEL ILLUMINATION**



**REDUCE ERRORS AND LABOUR TURNOVER WITH CLAUDE COLD CATHODE**

The link between good workmen and good work is good lighting. That is why Claude Cold Cathode Fluorescent Lighting is as fundamental to production efficiency as are good machine tools.

Claude Cold Cathode lighting raises the general level of illumination for the most critical seeing operations — without increasing shop temperatures, without producing the deep shadows and glare, and consequent eye-fatigue, nor-

mally associated with increasing light intensity.

The all-round advantages that accrue are tangible—reduction of rejects, of accidents, labour turnover and costs, as well as lower costs per lumen and increased lamp life.

Call your nearest Claude office for all the facts, and for details of the Claude Rental Plan, which avoids the necessity of incurring capital expenditure.

**FLUORESCENT  
LIGHTING**

**NEON  
DISPLAYS**

**PORCELAIN  
ENAMEL**

**CLAUDE**  
NEON LIMITED



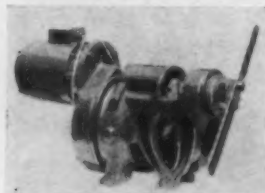
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YOU WANT TO KNOW . . . and the editors will gladly tell you . . . more about the inventions, materials, and processes mentioned on this page. Write to Box 1687, G.P.O., SYDNEY, enclosing a stamped, self-addressed envelope.

### Portable Hydraulic Bar Cropping Machine

The portable hydraulic bar cropping machine here illustrated



Portable Hydraulic Bar Cropping Machine.

is capable of cutting one mild steel bar of 1½ in. diameter or equivalent cross section, or a number of bars of smaller cross section, simultaneously. The machine weighs only 4½ cwt., and can be supplied mounted on a wheeled trolley if required.

The fixed jaw of the cropper is adjustable by means of a large-diameter, hand-operated screw, to

suit the diameter of the bar to be cut, while the moving jaw is coupled to a piston, actuated hydraulically. The pump is of the plunger type driven through gearing by a 5 h.p. flange-mounted motor, and all the mechanism is totally enclosed and runs in oil. The body, gear case, and cover of the machine are steel castings.

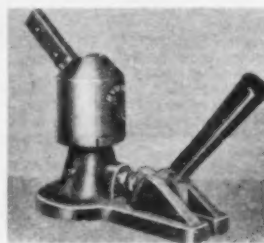
The arrangement of the hydraulic valve mechanism is such that a light pressure applied endwise to the jaw causes the valve to be opened automatically and the piston to move forward. In operation, the motor is left running continuously, and it is only necessary to place a bar between the jaws and, by means of the screw adjustment, bring it into light pressure contact with the moving jaw. When cutting is effected and the jaw returns automatically. Each jaw is provided with four cutting edges and can readily be turned round in its housing when it is required to present a new edge. The machine can also be supplied arranged with engine drive. [2476].

### Adjustable Mounting for Bench Use

The assembling, adjusting and servicing of small but complex articles such as typewriters, radio-receiver chassis, or sewing machines, may be hampered owing to the difficulty of mounting the article at different angles. It may have to be turned over on the bench or re-positioned in the vice many times during the operation, and this may waste a considerable amount of the operator's time, or even, on occasion, give rise to damage. The hydraulically-clamped mounting, illustrated, is designed to hold prisms an arm which swings in a vertical plane about one end, and is fitted, at this end, into a turret which will turn about a vertical axis. The turret rotates above a cast base which may be screwed to the bench or fitted to a pedestal; the base also carries a handle which locks the arm and turret in position and releases them when required.

The article is held in an adaptor which is fixed to the arm by two bolts, several types of adaptor, comprising frames, clamps or simple brackets, being provided by the makers. The arm

to which the article is fixed can swing from the horizontal to the vertical position about a ball which forms its inner end. The



This hydraulically-clamped mounting will hold articles up to 1 cwt. in any position.

ball is located between two spherical seatings, the upper of which is provided by the turret itself, while the lower is a circular pad which can slide vertically inside the turret and is supported on a vertical piston which is pressed upwards when the clamp

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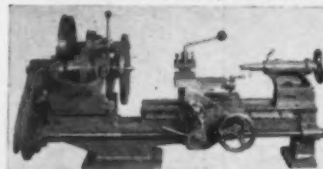
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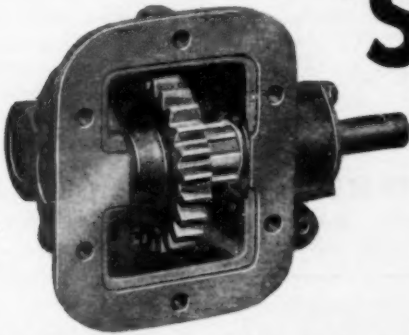


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**CAT. No. 2217 & 2218:** Adaptor used with above to obtain high speed, correct rotation and depth of mesh.

**CAT. No. 2095:** Spacers used for adjusting depth of adaptor

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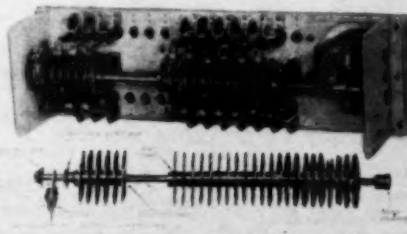
ASHLEY STREET, BRAYBROOK, VICTORIA, AUSTRALIA

is locked. The turret can rotate about a vertical axis and is held to the base by a ring which is fixed to the turret by set-screws and fits underneath a circular flange on the base. Locking of the arm and turret in any position is accomplished by the locking handle already mentioned, which is attached to a cam and, when moved either downwards or upwards from an intermediate position, causes the cam to exert pressure on a horizontal plunger. The plunger, which is adjustable in length, acts on oil in a chamber in the base of the turret, thus pushing the piston up. This causes the ball to be locked between its two seatings and also tends to force the turret upwards so that it is locked against the flange on the base. When the locking handle is returned to its intermediate position, the oil pressure is released and a small helical compression spring returns the vertical piston and releases the ball and turret. A screw is fitted to enable air to be removed from the oil chamber, and, if required, a long locking lever can be provided for foot operation. [2481].

## Timer Gives Accurate Cyclic Interruption

Developed originally for use in dial telephone exchanges, the motor-driven timer and circuit interrupter, illustrated below, is

The main cam shaft carries up to 22 cams, each operating a snap action break-make switch. By use of a set of planetary



Made for precision timing, this device has nylon rollers turning on hardened, polished, and chromium plated steel shafts attached to the main spring of each switch. The switch main spring is steel, and the transfer springs are beryllium copper.

adaptable to sequence timing and impulse generation for control of industrial processes, electrical displays, and automatic machinery. It is designed for continuous duty, with accuracy of timing within less than 1 per cent. of the cycle time on any of the switch contacts.

gears, a secondary hollow cam shaft coaxial with the main shaft is driven at a speed of the order of one-twentieth of the main shaft speed. The secondary shaft carries up to six cams, which are used in telephone service for obtaining relatively long intervals for delayed alarms, conversation

timing, and automatic fault lockout. For other services, this secondary shaft can be used for timing a separate process of widely different time cycle than the main shaft, or, since the ratio of its speed to that of the main shaft is fixed, it can provide pulses for marking particular numbers of cycles of the main shaft.

The cams are made of cold-rolled steel. They are copper-brazed to the hubs and case-hardened, after which the cam surfaces are polished and chromium plated. The cam shafts are tubular steel, centreless ground for accuracy of diameter, case-hardened, chromium plated, and straightened to within 0.002 inch total indicator reading. The ends of the main shaft are bored to within 0.001 inch total indicator reading with the outside diameter to receive the stub shaft at the motor end and the bell crank shaft on the other end. Holding these tolerances is necessary to keep eccentricity of the cams to a minimum for accurate timing.

Each of the switches is jacked into a three-point jack. The individual switch jacks are wired to a main jack at the rear of the base plate, and the motor leads are run to a twist-lock connector, so that the whole interrupter may be readily removed from its mounting by removing two nuts.

The motor is a double-reduction speed-reducer, a.c. synchronous

DO YOU USE OUR  
INQUIRY DEPARTMENT  
SEE PAGE 36





## SWIFT NEWSLETTER No. 46

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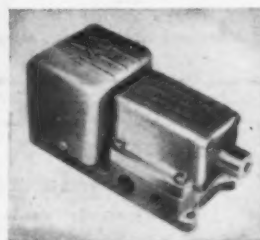
Victoria: Hawker, Richardson & Co., 209-215 William St., Melbourne.

type, interchangeable with a d.c. speed-reducer motor. The commonly used speeds are a six- or

eight-second cycle for the main cam shaft and a two-minute cycle for the secondary shaft. [2488].

## Two Pressure Solenoid Air Valve Saves Compressed Air

This 4-way, 5-port, two pressure, solenoid operated air valve effects



Easily serviced, this air valve has only one moving part, and it (the spool) may be removed by taking out 4 screws. Solenoid and wiring are also accessible.

a real saving in compressed air when used with a double acting cylinder. High or low pressure can be applied to either inlet port, and pressures can be reversed at the option of the operator. Pressure range is from 20 to 150 p.s.i. The valve is available in 1 and 1 1/2 in. pipe sizes.

Whether reduced pressure is applied to the cylinder work stroke or to the return will depend on the results required. In many applications it is imperative that a controlled low pressure be used on the work stroke, with higher pressure used to return the piston rapidly. Usually, however, full advantage is taken of maximum air pressure available to keep cylinder diameter at a minimum. The exhaust port may be restricted, when desired, to reduce cylinder piston speeds. [2456].

## Hand Loom Weaves 38-in. Sample Fabrics

A new hand loom with an aluminium-alloy-tubing frame which can be useful in woollen and worsted mills for weaving samples has been developed.

The loom has a completely new head motion which is said not to have been previously applied to hand looms. The head motion is semi-automatic and forms a new shed each time the hand wheel is turned 1 of a revolution. A unique harness-lock device is designed to hold harness firmly in position and to make it impossible to open a wrong shed.

The frame of the loom is of highly polished aluminium-alloy tubing. Use of aluminium and other lightweight materials makes

the loom light in weight—less than 35 lb. complete.

The loom is compact in size—21 in. high, 24 in. deep, and 41 1/2 in. wide. A fabric 38 in. wide can be woven. The head motion will control four harnesses.

The warp beam of the loom will hold 30 yd. Three simple hand motions are needed to insert each pick. No treadles are used to operate the loom—a handwheel and the head motion do all the work.

An adjustable friction let-off is said to be easily set and, combined with an improved cloth take-up, to assure even tension on the warp yarns. Production of 1 yd. per hour is said to be easily attainable. The loom is guaranteed for one year. [2452].

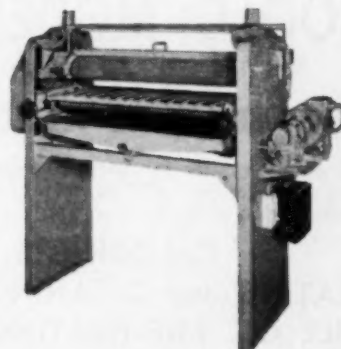


## THE "NATIONAL" GLUE SPREADER

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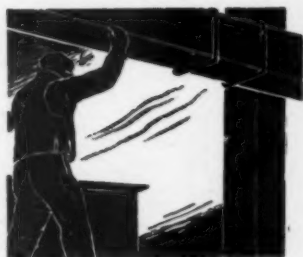
Rubber-covered, helically-grooved spreading rolls, and chrome-plated doctor rolls, regulated at will by micrometer adjustment, ensure the rigid control of spread necessary for economical use of resin glues. Complete with motor, the NATIONAL may be ordered in lengths to meet individual requirements. You are invited to call for test and full particulars, or for discussion of your own glue-spreading problems.



*This is the outfeed side of a National Sin. diameter roll model, for use in cabinet manufacture.*

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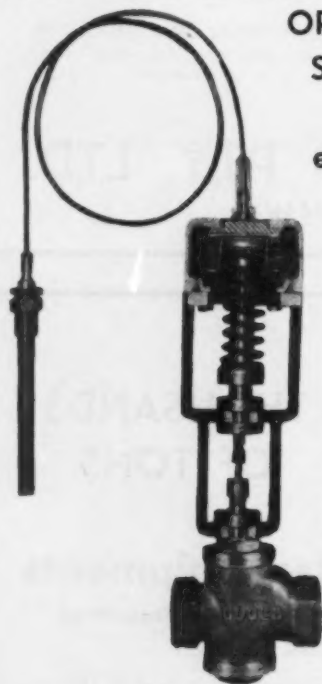
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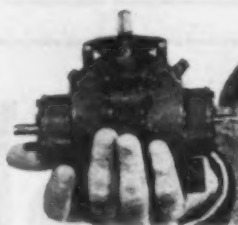
### Variable Speed Drive for Light, Continuous Duty

Several unique construction features have been used to make it possible to manufacture the accurate, infinitely variable speed drive, illustrated, at a low cost.

These features include use of two identical housing halves which eliminate the need for end covers, a one-piece roller carrier integral with the input shaft, a ring gear integral with the output shaft, and a name plate that

delivered torque up to 800 inch ounces.

A lever type control permits the transmission to be set accurately at an infinite number of speeds. The transmission will hold speed at given settings, and may be reset with great accuracy. The lever may be connected through suitable linkage to automatic control devices of various types—mechanical, hydraulic, electric, pneumatic, etc. Three tapered rollers are supported in the roller carrier, which turns at input speed. These rollers are loaded centrifugally or by spring tension against a hardened and ground traction ring, which is moved lengthwise by the control ring to change speed. Rollers are supported at an angle equal to their taper to make the outer edge parallel to the central axis. Pinions on end of tapered rollers mesh with a shaped internal gear to furnish output.



Only 6 1/2 in. long and 3 1/2 in. in width, the model 10E gives up to 50 ounce inches of torque at output speeds varying from 1,200 r.p.m. to zero. Model 10E uses spring tension on the tapered rollers. Model 10, using centrifugal loading only, gives up to 15 ounce inches of torque, and is for very light applications.

also serves as a speed indicator dial and control locking device.

For most applications, the Model 10E with spring loading is used to give output speeds from 1,200 r.p.m. to zero when run at an input speed of 1,800 r.p.m., and torque of 50 inch ounces over the entire range. The Model 10 without spring loading is used only for extremely light applications where the torque requirement is 15 ounce inches or less. Built-in reduction gearboxes with ratios from 3:1 to 1,000:1 are available and make a compact package of variable speed drive and gear reducer in a single unit requiring only four mounting screws—with

The three finely ground alloy steel traction rollers, and the input and output shafts turn in precision ball bearings. The transmission is self-lubricated and equipped with oil level and oil drain plugs. Sealed bearings permit mounting the transmission in any position. The control lever can be connected through a suitable linkage to automatic control devices. A micrometer type control, for fine adjustment, is also available on order. [2489].

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| X6   | 17 1/2 in. x 8 1/2 in.   | 4 in.           | 3 in.             | 6 in.         | 1 1/2 in. |
| X8   | 21 1/2 in. x 9 1/2 in.   | 5 in.           | 3 1/2 in.         | 9 in.         | 2 in.     |
| X7   | 25 1/2 in. x 10 1/2 in.  | 6 in.           | 4 in.             | 12 in.        | 2 in.     |

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## Where Research is Helping Industry

### Britain's Atomic Energy Research Establishment at Harwell is Scene of Practical Development

(By Derek Wragge Morley, British research worker and lecturer.)

Britain's Atomic Research Establishment at Harwell was set up in 1946 on the site of a Royal Air Force station near Didcot, in Berkshire, England. The Director is Professor Sir John Cockroft, who formerly worked with Lord Rutherford, the great atomic physicist. In 1932 Sir John Cockroft achieved world fame by demonstrating for the first time the break up of an atomic nucleus by means of a machine he had helped to devise.

THE work at Harwell is wide and varied. Some of the scientists devote their energies to pure research in atomic physics; others undertake more applied research such as finding out more about possible methods of manufacturing radio-isotopes. An idea

available in the piles and thus enable the scope of experimental work undertaken to be greatly extended.

"LIFE" OF 5,000 YEARS.  
Atomic piles appear as largish concrete buildings of variable

ing properly, or how the body is disposing of certain drugs which are being given in treatment. These radio-active isotopes can also be used to replace radium in the treatment of cancer and other similar growths. They are much cheaper, less dangerous to handle, and available in larger quantities.

Radio-active isotopes are also used extensively in agriculture where they are used to ascertain how much of certain fertilisers is taken up by the crop plants, and even to trace the passage of certain pests (marked with minute isotope samples) through the soil. They are also extensively used in industry and have provided much information about the efficiency of certain types of oils in lubricating working parts, since the spread of

the oil can be exactly followed by means of testing for the presence or absence of these radio-active isotopes with specially sensitive monitors, both while the machine is in action and while it is at rest. Britain is one of the world's greatest producers of these substances and sends samples of isotopes to more countries than any other manufacturer. In November, 1949, as many as 338 samples were produced and were sent as far afield as New Zealand, Australia, Sweden and Switzerland.

#### USE IN INDUSTRY.

Another important practical development at Harwell has been the research into the possibility of using atomic energy industrially. A

(Turn to page 32.)



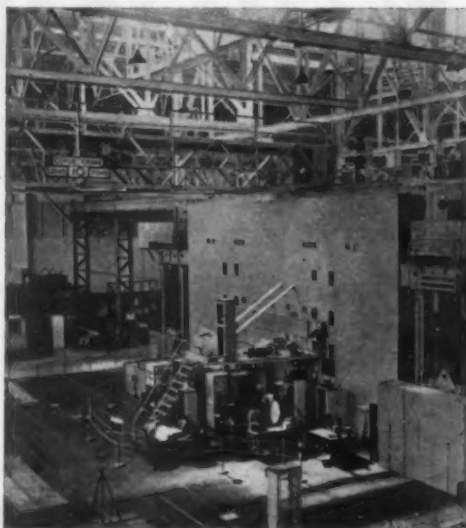
To load materials into the atomic pile at Harwell, England, for irradiation, the operator sits in front of a lead barrier. This contains holes through which cans containing the materials are pushed into graphite blocks which slide into the pile. This operator has his hand on the wheel controlling the movement of the blocks.

of the scope of the pure research which is being carried out at Harwell can be gathered from the fact that over 100 scientific papers are either in the Press or have been accepted for publication.

On the more practical level, a considerable amount of development work on the form and efficiency of atomic piles has been undertaken. For example, the Metallurgy and Engineering Divisions have developed a special type of uranium cartridge—a cylindrical uranium rod inside an aluminium case—which is able to resist a much higher temperature than those previously used in atomic piles. It is expected that these improved cartridges will make it possible to obtain a considerable increase in the energy

height (usually about 20 feet or so tall) but which have no windows or doors. It is in these piles that radio-active isotopes are manufactured. These isotopes are elements which as a result of irradiation in the atomic pile give out radiations for periods ranging from a few minutes to 5,000 years. The time during which these radiations decrease by half is known as their "half life".

If isotopes are used in very small quantities they will not harm an animal or person into whom they are injected, and they can thus be of very great use in helping scientists and doctors to find out what actually goes on within the body, or even within a single small living cell. It is possible to find out whether certain organs are work-



The face of one of the atomic piles at the Atomic Energy Research Establishment at Harwell, Berkshire, England. Experimental equipment can be seen at the front and on top of the pile. The square holes are entrances to the pile which is built up of thick concrete blocks.



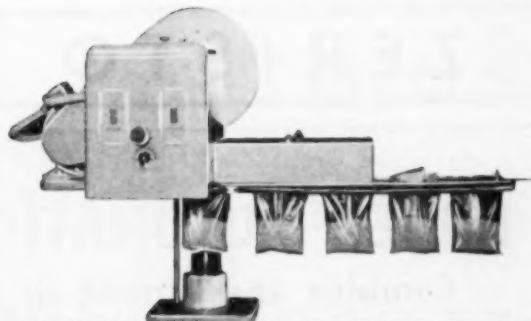
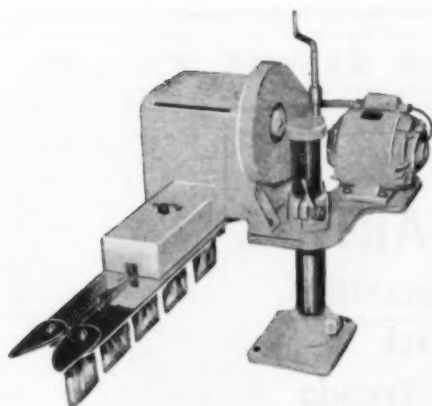


Photo above shows filled bags travelling along the conveyor feed and approaching the preheater bars. In the feed end view (left) note the lifting-lowering stand, instantly adjustable for various bag heights.

## Rotary Heat Sealing

### Weston's Offer Australia's First Fully Automatic Machine

The first Australian-made fully automatic rotary heat sealing machine for bags, pouches and envelopes of Cellophane and similar materials is now offered to the packaging departments of Australian industry by Weston's Pty. Ltd., for whom it is being exclusively manufactured.

The "Quikpak" heatsealer, incorporating the latest engineering developments and equipped with a preheater and an extra-long conveyor feed arm, is designed along simplified lines to do a better job on any size and type of package of heat-sealable material.

**O**PERATING at 400 lineal inches per minute as standard speed, the "Quikpak" Rotary Heat Sealer

will heat-seal 160 2-inch bags per minute, fed  $\frac{1}{8}$ -inch apart. Speeds to match existing conveyor equipment are available, and it can be furnished with variable speed drive.

Entering at the conveyor feed intake, bags are gripped by the continuously revolving silent spring belt drive conveying mechanism, and are carried through the preheater for a positively timed dwell in which the material is properly softened, then through the thermostatically-controlled heat-sealing rolls. The bags are discharged securely sealed.

Three types of seal are offered: a neat vertical crimp, used principally for narrow bags; a horizontal crimp style, especially good for wide bag tops on which a straight seal is needed, since this style will not shorten or "accordion" the bag top; and a flat seal for when crimp impression is not needed or desired.

Weston's Pty. Ltd. have listed the following as special features of the "Quikpak":

1. Conveyor feed wing which makes possible a continuous flow

of bags through the machine, increasing production through facilitating feeding.

2. An extra-long preheater which assures proper preparation of practically all types of heat-sealing materials for secure seal.

3. Thermostat dials conveniently located on the front of the machine, providing visual indication of sealing temperatures.

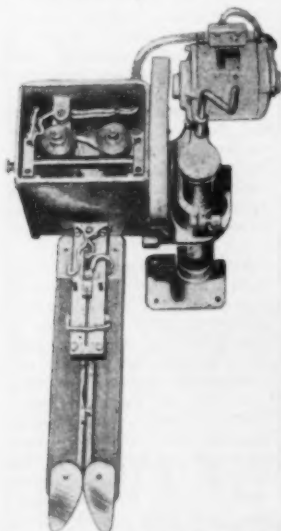
4. A protected and unobstructed feeding area with flat guards for the operator's safety and convenience in bag handling.

5. Easily accessible parts completely protected by a removable guard.

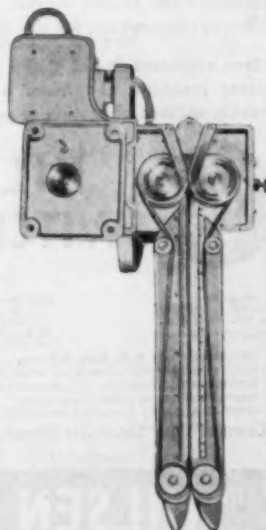
6. A conveyor frame ruggedly constructed and precision machined for accurate assembly of parts.

7. A narrow, heat-resistant, stretchproof, silent spring belt drive which assures long, dependable service as a bag conveying medium.

8. An automatic belt take-up and tension control device which requires no adjustment, provides for the easy removal of the belt for cleaning, and minimises wear of chain and sprockets.



Top view of the "Quikpak" Rotary Heatsealer.



Bottom view of the "Quikpak" Rotary Heatsealer. Note specially spring-loaded sealing roll pressure adjustment; silent bag conveying mechanism with sprockets and automatic take-up.



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Cork Board, Cork Sectional Pipe Covering, Granulated Cork.

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Combine the Utmost in Dependability  
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Nilsen makes the complete line of automatic starters, essentially modern in design, yet with that dependability which comes from forty years of electrical experience.

The standard range for squirrel cage motors includes Star Delta Starters from  $\frac{1}{2}$  to 45 horsepower, Primary Resistor Starters from 5 to 45 horsepower and Auto Transformer Starters from 5 to 100 horsepower; also Secondary Resistor Starters from 5 to 45 horsepower for Slip Ring Motors.

Nilsen-built Automatic Starters can be supplied to control the largest motors normally used in industry, custom-built for the specific installation.

Nilsen engineers would gladly study your motor starter problem, and make a recommendation entirely without obligation to you.



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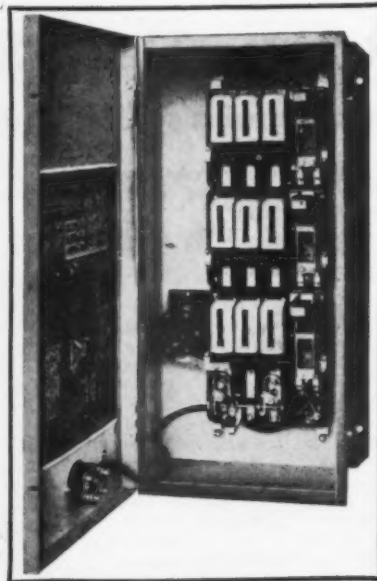


Illustration Shows —  
the New 10 H.P. Enclosed  
Automatic Star Delta Starter.

This unit incorporates automatic ambient temperature control, adjustable definite time delay, and two thermal overload relays, housed in a substantial dust and splash-proof sheet metal case. Available from stock.

9. Free-floating front guide bar, self-regulating for bag thicknesses. Thumb screw adjustments, conveniently located at front of conveyor arm, permit variable spring tension.

10. Guide bars are easily replaceable for low-cost maintenance and repairs.

11. Ball-bearing idlers for trouble-free, frictionless operation.

12. An accurate, high-quality thermostat for close temperature regulation of preheater and sealing rolls up to 300 deg. F.

13. Long life heating elements which provide evenly distributed heat over the entire preheating area and sealing rolls.

14. Rollers are of wear-resistant bronze, driven by worm gearing at identical speed.

Various types of attachments for the "Quikpak" Rotary Heat-sealer can be furnished at low extra cost. One of these is the "Quikpak" belt conveyor which is designed to carry filled bags on a moving belt to the sealer entrance. By providing a constant flow of bags from the filling operation, maximum production can be achieved. When the weight of filled bags exceeds 2 ounces per inch of bag width (for example, a bag 4 inches wide weighing 8 ounces) the "Quikpak" conveyor is definitely recommended by Weston's to provide bottom support for bags.

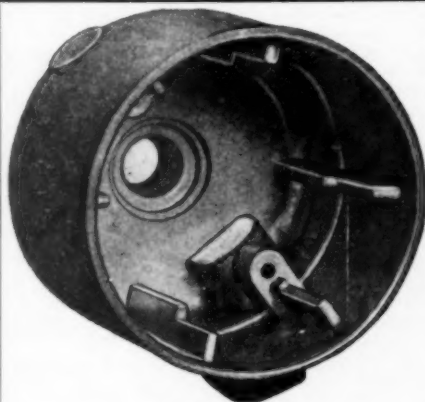
In offering what is claimed to be the first fully automatic heat-sealing machine to be made in Australia, Weston's are continuing their major role in the keeping of production costs of industry down to an absolute minimum.

The "Quikpak" is added to a comprehensive range of packing room requirements—over 250 items at a recent count—which are being distributed by the company in Sydney and by branches established in Melbourne, Brisbane, Adelaide, Perth, Newcastle and Cairns.

A glance at the comprehensive catalogue produced by Weston's supports the claim they make: "Whether you do much or little packing, whether your requirements are large or small, Weston's can supply them to your satisfaction". It contains particulars of

(Turn to page 32.)

The **NILSEN INDUSTRIAL GROUP**



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save cost because  
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ensures accurate, dependable  
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(Continued from page 30.)  
such items as machines for cutting  
oilboard stencils; stencil ink; or-  
dinary type and fountain type  
stencil brushes; a utility ink  
marker with a reservoir of water-  
proof stencil ink in the handle;  
hand and electric models of label  
gumming machines, from 6in. to  
30in., for hot or cold glueing; a  
counting and weighing machine for  
mass handling, counting and  
weighing of small articles; tacking  
machines, stapling machines and  
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and trolleys of all descriptions;  
gravity conveyors; gummed tape  
machines and gummed tape; an  
extensive range of adhesives and  
gelatins; hammers, hatchets, nail  
extractors, scrapers, etc.

Brief reflection on the variety  
of these items alone will give some  
indication of the extent of West-  
on's service to packaging and  
goods handling departments—en-  
hanced now by the addition of the  
first fully automatic rotary heat  
sealer made in Australia.

**Where Research is  
Helping Industry**  
(Continued from page 28.)

study of radiation-effects of all  
kinds is constantly being carried  
out. The effect of neutrons and  
gamma radiations on many dif-  
ferent kinds of materials and  
chemicals, for example, is studied  
by means of comparing the prop-  
erties of these materials both before  
and after they are subjected to ir-  
radiation. Such studies give infor-  
mation of a fundamental kind  
about the chemical changes which  
can be induced by nuclear radia-  
tions. They also help the scien-  
tists to find out more about the  
kinds of materials which may best  
be used in the making of new  
atomic piles or in portable atomic  
power units. At the same time,  
the narrow beam of neutrons  
which is allowed to escape from  
the very centre of the pile through  
a small hole in the concrete and  
steel shield, enables physicists to  
study the precise form and detail  
of many types of nuclear reactions  
such as, for example, the process  
of fission itself (the basis of the  
uranium bomb), and many other  
details about the fundamentals of  
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250,000 gallons of water a day and  
all this water must be tested for  
radiation and purified before it can  
be allowed to escape into the  
river. This is done by passing the

(Turn to page 34.)

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# M.V. Turbo-Alternators for Pyrmont "B"



Shown below is a 106-ton stator being loaded in England for shipment to Australia—part of a 55,500 kVA, .9 P.F., 33,000 volt M.V. Turbo-Alternator.

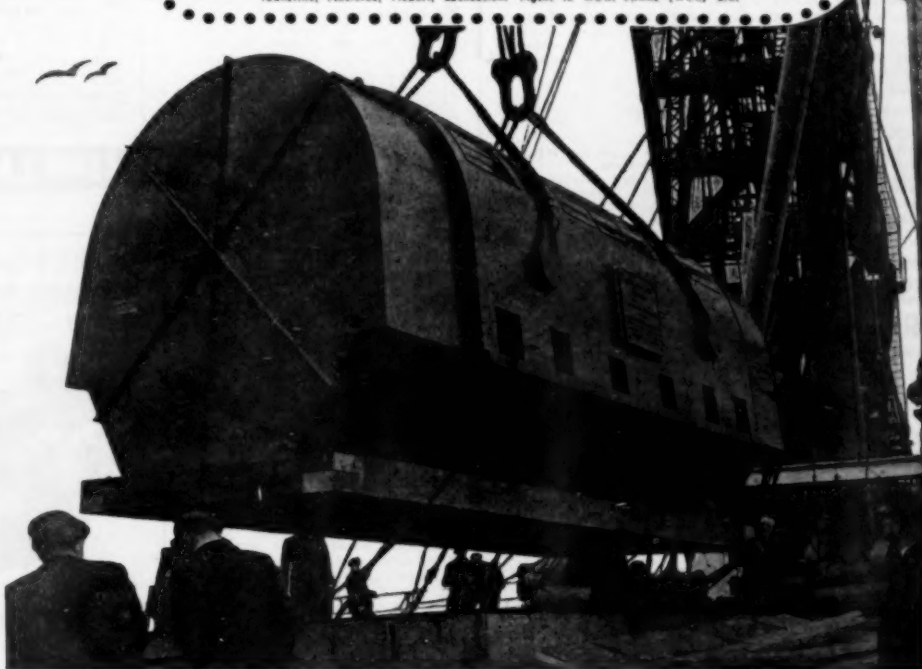
Australian General Electric Proprietary Limited is supplying four Turbo-Alternators for the new high pressure power station, Pyrmont "B", Sydney. The turbines incorporate three cylinders, arranged for a steam pressure of 1,200-lb. per sq. in. with a total temperature of 925° F. at the stop valve. Each set has a length of 87 feet.



**AUSTRALIAN  
GENERAL ELECTRIC**



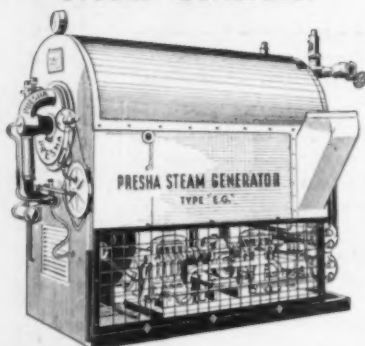
Sydney, Newcastle, Lismore, Melbourne, Brisbane, Rockhampton,  
Townsville, Adelaide, Hobart, Launceston. Agent in W.A.: Atkins (W.A.) Ltd.





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Ask for a list of users. Get their opinion, there is no better recommendation.

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"SPECIALISTS IN VITREOUS PORCELAIN ENAMELLING"

(Continued from page 32.)

water through a series of large tanks in which it is first agitated by means of big mechanical stirrers and then allowed to settle before being passed on to a smaller series of tanks known as dosing chambers. It is in the dosing chambers that the most important part of the process of purification is undertaken.

Different chemicals are added to the water according to the type of radio-active substances which are known to be present. These chemicals combine with the radio-active ones to form a precipitate which falls to the bottom of the dosing chambers, or the following sledge tanks. After a further period of settling, the effluent water is again tested for the presence of radio-active substances. If it is not yet found to be free from them, the water is returned to the first tanks to undergo the whole process of settling, dosing and settling again.

### RIVER TEST.

The effluent is tested finally at the weir six miles away from Harwell at which it enters the Thames. The mud and water below the weir are also constantly tested to see that microscopic quantities of radio-active substances are not building up to dangerous amounts. Further tests are again undertaken 12 miles further down the Thames.

The air in the grounds at Harwell is also kept under surveillance by means of special monitors, and special vans maintain a continuous patrol round both Harwell and the surrounding country-side.

Among the other Departments at Harwell are two concerned with Health Physics and Medical Health. The former is responsible for the many instruments for recording radiation and has developed standard types for this purpose which are used throughout the Commonwealth. All the laboratories at Harwell are especially designed to avoid such possible sources of danger as the collection of dust or unnecessary handling of radio-active materials. The Health Physics Department sees that no worker has been exposed to excessive amounts of radiation. It also advises the scientists before they start experiments so that full precautions against radiation danger may be taken.

The Medical Department checks the health of the scientists and other workers engaged in handling radio-active substances. Workers exposed to greater risks of radiation have blood counts and urine tests as frequently as once a week. To make doubly sure, every worker at Harwell wears a film badge which is examined each week to see if there has been any exposure to radiation.

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Pioneer Forest Products Pty. Ltd., Laurel Hill—Timber and Joinery.  
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Unique Styles Pty. Ltd., Pioneer House, 134 Broadway, Sydney—Children's Clothing.  
Walco Electrolasters, Tennyson Parade, Guildford—Electroplating.  
(Turn to page 68.)

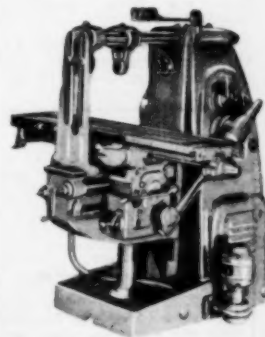


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# INQUIRIES FOR PLANT MATERIAL AND AGENCIES

"THE AUSTRALASIAN MANUFACTURERS" INQUIRY DEPARTMENT

This Inquiry Service is for the use of readers of "The Australasian Manufacturer" who wish to trace suppliers of Plant, Equipment and Materials, and for particulars of agencies offered. Address your inquiry to the Inquiry Department, and give the fullest possible particulars to enable us to put you in touch with the best sources of supply. **INCLUDE A STAMPED SELF-ADDRESSED ENVELOPE WITH YOUR INQUIRY.** It is essential that telephone inquiries be confirmed by letter. No charge is made for Inquiry Services, but normal advertising rates will be charged if agencies are sought by manufacturers' representatives or if goods are offered for sale. For the benefit of new subscribers, inquiries will be published in two or more consecutive issues.

## SPECIAL NEW INQUIRIES.

WHEN REPLYING to an Inquiry, please quote the Reference Number and send your reply to the Inquiry Department, "The Australasian Manufacturer," 16 Bond Street, Sydney. **INCLUDE A PLAIN, STAMPED ENVELOPE** so that we can forward your reply to the Inquirer.

**AGENT FOR VICTORIA WANTED:** N.S.W. Engineering and Importing Company desires to contact a manufacturers' Agent to sell well established product with ever increasing sales; alternatively able control Victorian Branch Office on remunerative commission basis. Electrical and steam knowledge essential. Write to Ref. 8201, c/o "The Australasian Manufacturer."

**STEEL FOR SALE:** Sydney firm has for sale 8 ft. of 41 in. dia. Bohler E.B.K. Steel. Write to Ref. 8202, c/o "The Australasian Manufacturer."

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crete roofing tiles are requested to write to Ref. 8203, c/o "The Australasian Manufacturer."

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**TRADE WITH VENEZUELA:** An inquiry has been received from an exporting firm located at Caracas, Venezuela, South America, in which they say they desire to contact Australian manufacturers interested in this market. The name of this firm will be supplied on application to Ref. 8205, c/o "The Australasian Manufacturer."

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Spark Plugs.  
Oil Filters.  
Car Clocks, etc.

Our representative will be in Australia during September to contact manufacturers and exporters.

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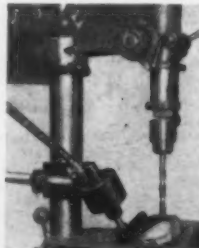
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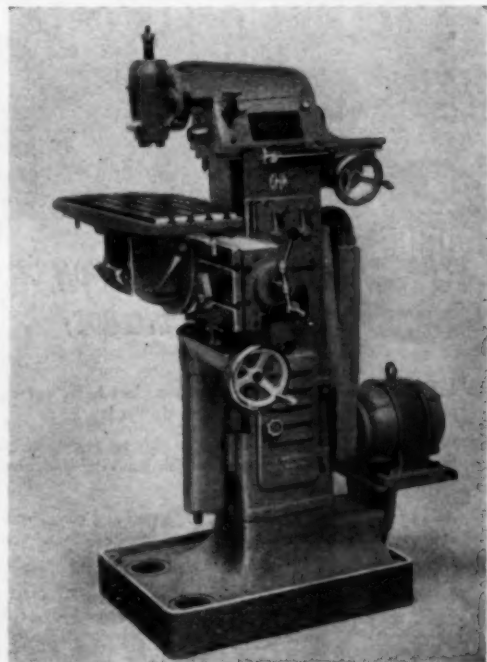
**PREFABRICATED PIPES:** A Dutch firm which specialises in the fabrication of steel, copper and other piping for installation in ships, oil refineries, factories, etc., wishes to engage in the production of such commodities in Australia and is interested in partnership or other form of business association with a similar existing establishment in this country. Write Ref. 8200, c/o "The Australasian Manufacturer."

**CRUSHING ROLLS WANTED:** Sydney manufacturer requires urgently set of crushing rolls. Please supply details of size, make and price to Ref. 8191, c/o "The Australasian Manufacturer."

**SPRING STEEL WANTED:** Brisbane firm wants to purchase quantities of 7/16 in. Spring Steel in widths of 2 in., 2 1/2 in., or 3 in., in lengths of 2 ft. 6 in. upwards. Write to Ref. 8178, c/o "The Australasian Manufacturer."

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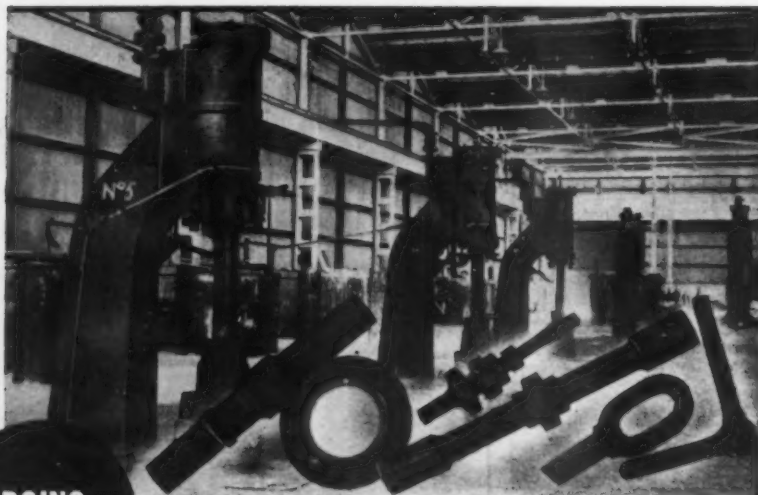
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**PRODUCTION OF LEATHER GOODS:** A Dutch firm of leather tanners and manufacturers of leather articles, wishes to engage in the production of these items in Australia, and is interested in partnership or other form of business association with a similar existing establishment in this country. Australian firms interested in this inquiry are requested to communicate with Ref. 8186, c/o "The Australasian Manufacturer."

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**MILD STEEL OFF-CUTS:** Country firm in New South Wales is seeking off-cuts of mild steel (black, zincanneal or galvanized), in gauges 16 to 20. They desire to cut these off-cuts to sizes 12 in. x 2 in. approximately. They require up to approximately 100 lbs. Write to Ref. 8188, c/o "The Australasian Manufacturer."

**STEEL AND MILD STEEL PRODUCTS:** Firm with excellent overseas steel connections desires contact interested parties in each State, with the view of importing and distributing imported steel. Financing of imports will be considered. Write to Ref. 8129, c/o "The Australasian Manufacturer."

**COLOURED LENSES FOR SWITCHBOARDS:** Victorian firm desires to contact makers or suppliers of coloured lenses for flush pilot receptacles which they fit to switchboards. These lenses are made of glass, some being shaped round and others oblong. They vary in size from about 1/2 in. diameter to approximately 2 in. The colours are usually red, green, blue and orange. They are also used on radio receivers, motor car head lamps and dash boards, and in telephone exchanges. Size wanted is approximately 1 1/2 in. diameter. Write to Ref. 8179, c/o "The Australasian Manufacturer."



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## New Ideas in Plastic Mouldings

Featuring items of special interest to Australian manufacturers and users of Plastic Compounds.—Published with the object of further developing this important industry in Australia.

### Engineering Drawings on Vinyl

**Improved contact-printing process utilizes plastic sheet for reproduction on sensitized surfaces. Variations of method permit simple multiple duplication**

IN these days of increasing industrial complexity, it is refreshing to uncover an occasional process so simple that it is downright ingenious. Such a process

most manufacturers. The time-consuming transfer of original drawings to sheets of metal by hand quickly faded before the stepped-up tempo of war-time pro-

plates. It has the advantage of being able to produce prints of the original drawing reduced or increased to almost any scale.

The vinyl-sheet process is con-

This coat penetrates the vinyl sheet, becoming more a part of the sheet than a coating.

The prepared vinyl sheet has a surface that "works" very much



Black lacquer is first applied to material on which drawing is to be reproduced. Then thin coats of sensitizer are sprayed on.

has been developed by an overseas aircraft corporation where sharp, hairline engineering drawings are being reproduced directly on metal surfaces from vinyl sheets.

World War II was responsible for the elimination of complicated and expensive lofting processes by



Printing process is handled on large copyist machine on which etched lines in vinyl sheet stand out clearly. After plates of sensitized material are exposed briefly to light, design is "burned" directly on part and then is washed.

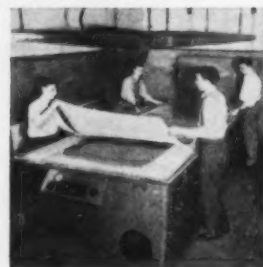
duction. Most major companies went in heavily for projection methods of reproduction; others toyed with contact printing from inked drawings on translucent sheets.

Most companies to-day are still using a camera projection process whereby drawings are photographed on a sensitized glass plate and then projected through the plate on sensitized metal. This method involves a huge expenditure for room-sized cameras and other gargantuan photographic equipment and gives rise to problems of handling and storing assorted sizes and shapes of glass

sheets. Actual size drawings are prepared directly on processed vinyl material and are reproduced by an improved contact-printing process on form blocks, template stock, aluminium alloy sheet, or sheet steel. The drawings may also be transferred to other vinyl sheets by the same process.

#### VINYL PREPARATION.

First step, says F. B. Stanley, engineering editor of "Modern Plastics", is the spraying of clear vinyl sheet stock with a primer plastic coat consisting of yellow paint, toluol, and aluminium paste.



Copyist machine, which prints the drawing on sensitized metal surface, handles large reproduction jobs in single operation.

the same as hard-finish drawing paper. Drawings are made in pencil in the original layout and then etched in with metal scribes. These scribes make hairline trac-



Hand trimming with a shear roughs out template upon which drawing has been reproduced from vinyl sheet.



New reproduction technique facilitates accurate inspection. Inspector checks fabricated part by laying the finished piece over original pattern.

# NESTORITE

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Ferguson's use one type of plant for grinding and sieving of wood-filled powders, and an altogether different type of plant for those with cotton fillers, such as A.645. Thus, in the latter, undue fluffing is obviated, scientific screening assured and all dust resulting from grinding carried away into cyclones and filters. The whole secret of "Nestorite" is the use of one exclusive type of plant for each particular powder. This gives a consistent powder. Consistent quality in powders gives consistent quality in mouldings.

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ings and keep within the close tolerances of aircraft fabrication work. Mistakes may be easily "erased" by painting over the incorrect portions with some of the original paint. Repainted sections of the sheet can later be scribed.

The material on which the drawing is to be reproduced is first sprayed with black lacquer. Material is usually pre-cut to the size of the finished part, although entire assemblies covering areas of up to 4 by 12 ft. have been reproduced in one operation. A sensitizer is then sprayed over the primer.

### SEVERAL COATS.

Three to four thin coats of the sensitizer have been found superior to one heavy coat. Drying is almost immediate, so the coats may be applied in rapid succession. The sensitized metal is then ready for exposure, although quantities of the material can be stored from 10 days to two weeks if kept in a cool, dry place without too much light. The sensitizer is short adversely affected by brief periods of exposure to ordinary inside room lighting.

### COPYING.

Large copyist reproduction machines are used for printing the drawing on the sensitized metal surface. The company has experimented extensively with simplified equipment, however, which it recommends to service facilities.

Excellent results have been obtained with an ordinary photo flood lamp which is passed over the sheet several times. A 45-sec. exposure to ordinary sunlight has also proved satisfactory.

Such a simple set-up consists of placing the sensitized metal sheet on a felt backing and covering with a scribed vinyl sheet. A piece of glass on top of the entire assembly will hold the pattern flat while the exposure is being made.

After exposure, the material is washed with a solution of warm water and sodium carbonate in 2% solution. This softens the sensitized coating which may be washed off under normal hydrant pressure. Just the exposed coating is washed off and, as the lacquer undercoating is black, the hairline design appears finely etched and clearly visible on the metal.

### EARLIER METHODS.

An earlier method of contact reproduction employed a simpler reversed process consisting of merely drawing a design in pencil or India ink on vinyl and exposing over a sensitized metal. The entire surface was then washed away, leaving the design lines etched in white on the metal. Other than the obvious disadvantages of lines getting smudged or obliterated during the process, they tended to reproduce too thickly and varyingly for close tolerance work.

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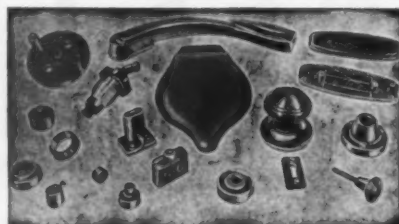
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Where vinyl drawings are subjected to heavy use, it is desirable to produce duplicates of the original. The clear vinyl sheet is first given a lacquer coat to provide a "tooth" for the sensitizer. The printing process is the same in this case and the reproduction may be made either directly or in reverse. Reproductions can be made from the duplicate in the same manner as the original. The sheet may be dyed red or yellow to improve opaque qualities and distinguish from the original drawing.

#### NEGATIVES.

It has been found that ordinary blueprint machines generate too much heat for satisfactory handling of vinyl sheets, so in instances where a large number of blueprints are needed, a copyflex negative may be printed from the original vinyl drawing. The blueprints are then printed from the copyflex negative.

The sensitizer coating on the finished parts has proved rather tough and can be bent, sheared, or punched without flaking. Fabrication instructions or other printed matter may be etched on the original vinyl pattern and printed directly on each part.

#### SIMPLIFIED INSPECTION.

The vinyl system of reproduction as used in the aircraft industry has greatly facilitated inspection procedures. Instead of checking each part with devious and time-consuming measuring devices, the inspector merely lays the finished part over the pattern for an accurate check.

## SILVER CHEST OF POLYSTYRENE.

A new silverware chest—said to be the first injection moulded unit of its size and kind—has been introduced. The chest is made of Lustrex polystyrene with interior accessories of polyethylene. The container, holding a 61-piece silver service for eight persons, provides protection, enhances both domestic

and commercial display, and is adaptable to sales presentation.

In a departure from conventional wooden cases, the maker has designed a chest measuring 16½ by 11 by 3½ in. The chest's largest piece, the base, weighs 28 oz. The container's wall thickness is a quarter of an inch.



Silverware Chest of Polystyrene.

Although introduced in a special maroon shade, referred to as a deep wine red, the chest lends itself to colour changes to conform to both store and home surroundings. Supporting the chest are four

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feet of crystal clear polystyrene. A cover lift is made of the same material.

Installed in the interior of the upper lid are a series of white polyethylene knife holders. These accessories are attached to the cover pad by a washer welded to the butt of the holder with an electric contact. Both the cover and base pad are maintained in place by peach-coloured pins, also moulded, and designed with a taper fit. When the pins are inserted in bosses previously moulded into the top and bottom of the container, it is virtually impossible for the pads to fall out.

Construction of the chest is aimed at protecting the silver against tarnishing. To make the container airtight, the bottom pad projects  $\frac{1}{8}$  in. above the chest sidewall, thus preventing the entry of free sulphur. In addition, the nesting fabric has been chemically treated with a tarnish-preventive formula.

Of particular interest to sales personnel is an arrangement whereby two lids, hinged together form a salesman's sample case. Sales figures and dealer reception of the new chest are currently being given careful consideration to determine the future of the plastic container as a standard feature of this industry.

#### KNIFE SHARPENER. HAS PLASTIC HOUSING.

Compactability and safety have been incorporated in a pocket knife-sharpener with a plastic housing recently developed. Constructed in the shape of a telescopic cylinder which opens for action with a half-turn twist of the fingers, the knife grinder described consists of a grindstone surrounded by two cellulose acetate



Cylindrical housing for grindstone has four cellulose acetate sections.

tate wheels. When the sharpener is in use, the knife blade is supported at the correct grinding angle by resting it against one of the plastic wheels.

The grinder—which derives its name from the rolling action involved in the sharpening operation—is made of Tenite I, which was selected as a tough plastic that would withstand the abuse to which such a device is subjected.

To eliminate the difficulties of producing a moulded-in thread in the plastic end pieces, each of the two plastic rings enclosing the



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#### Production Note—

**Product Illustrated:** Floor polisher housing. **Client:** Tecnico Ltd. **Dimensions:** 8 ins. high, 14 ins. wide. **Material:** Cotton flock filled, medium shock-resistant phenolic, walnut finish—the first moulding of its type produced in Australia.



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SUN-1-X-607

grindstone has been moulded in two pieces instead of one. When the pieces are assembled, they form a cylinder whose interior grooves simulate an undercut thread without requiring the use of cams in the moulding machine.

As the plastic cylinders are twisted into the open position, a metal disc with lugs rides up on the thread, bringing the grindstone into position for use.

The grinder has been designed to prevent flaking of metal from blades as knives are sharpened.

## OUTSIZE CHAMPAGNE GLASS.

In our issue of February 25, reference was made to a 8 ft. tall champagne glass made from Perspex material and used to advertise a brand of wine at the Wine Festival held in South Australia. The glass, which held 25

gallons of liquid, was manufactured by Acrylic Plastics, of 173 Plenty Road, Preston, Victoria.

## UNWOVEN FILLER FOR LAMINATES.

A non-woven fabric is now being offered as a reinforcement for plastics laminates.

In this fabric, the pure bleached cotton fibres are closely entangled into a well-integrated sheet of low bulk factor and good lamination strength. This sheet can be handled on impregnating equipment with no plucking or sticking to squeeze rolls. Due to the absence of binders or other impurities, it is the laminator alone who maintains control over the finished laminate.

This purity, coupled with the fact that the cotton goes into the saturating vat in the form of individual fibres rather than as yarns, allows thorough saturation, yield-



ing laminates of low water pick-up and good electrical properties. The even distribution of the fibres gives microscopically uniform reinforcement and excellent machining and punching characteristics, according to the producer.

For low pressure moulders, this non-woven fabric is interesting because of its ability to conform to complex contours. Used as a surfacing medium for coarser, stronger fibres, it yields a smooth, pit-free surface which enhances the appearance of the finished articles.

#### PLASTIC FOOD TRAYS.

Designed for indoor and outdoor entertainment are two new refreshment trays moulded of polystyrene which have recently been introduced to the market. One a small serving unit, and the other a picnic carrier. Both feature separate compartments.

The small serving tray can be used for serving refreshments at parties as well as for service in the sick-room. It is divided into five compartments: a large compartment for food, two smaller compartments for food, a napkin holder, and a holder for a cup, which is an accessory. The tray is gated underneath the cup compartment. The polystyrene tray, which measures approximately 7½



Polystyrene refreshment trays have moulded-on feet to prevent scratching.

by 5½ in., has moulded-on feet to prevent surface scratches.

The picnic tray has ten compartments: two large food compartments, five smaller food compartments, a napkin holder, and two other compartments to hold a tumbler and a cup. The cup and tumbler, which are tip-proof, are so designed that when inserted in the holders they touch neither the tray's wall nor the bottom of the holder. Thus, in serving iced drinks, condensation will run down into the holder. It measures approximately 12 by 8½ in. and is centre-gated. Like its junior counterpart, it has moulded-on feet to minimise surface contact.

#### ACRYLIC LENSES.

A telescopic rifle sight, incorporating acrylic plastics lenses instead of glass, with a power magnification of six, and a total weight of only 6 oz., is now being produced in quantity in Australia. The lenses are accurate and virtually unbreakable.

The makers of the sight aim at an eventual weight of 4 oz. by using plastics for the tube of the sight



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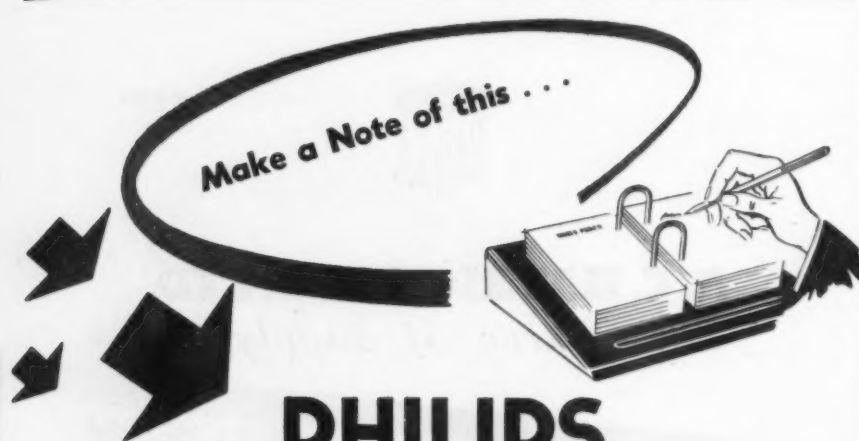
EUSTON WHITE LEAD, dry and in oil; NUODEX NAPHTHANATE DRIERS, guaranteed metal contents, cobalt, lead, manganese and zinc; MANOX BLUES, bronze and non-bronze; OXIDES, black, green, red, yellow; ALUMINIUM powder and pastes; CARBON BLACK; TANNERS' REQUISITES, oils, etc.; KEENOK single roll paint grinding mills; ROGERS FULL FLOW VALVES.

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05-19

Instead of the aluminium alloy extrusion at present housing the lenses.

The high-powered telescopic sight is intended for light sporting rifles, and it employs adjustable cross-wires instead of lines engraved on the lenses themselves. A sight with a power magnification

of four is to be produced for high-velocity rifles.

### PLASTIC INSULATED SCREW.

In making this insulated screw a metal core is first knurled and a

plastic covering then extruded around the core. The piece is then screw-machine finished to form the head and threaded section. The plastic portion of the head is not subject to strain because the metal core carries the torque of the driving tool.

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The most important use will be in the assembly of electrical components. The screw eliminates the need for insulating washers and jackets and allows the designer to simplify many cumbersome constructions that have formerly been



A variety of sizes and head shapes are shown. Cores may be brass, steel, aluminium, or any other metal. Any type or colour of extrudable plastic may be used.

necessary. The screw also insulates against heat and chemical action, and acts as a damper for vibrations. Any size and head style, and any kind or size of threads may be obtained on special order. A great variety of colours are available.

### NEW EXPANDED PLASTIC IS LIGHT- WEIGHT INSULATOR.

This new material is produced in flexible moulded shapes. Vinyl paste dispersions are processed to form an expanded unicellular polyvinyl chloride composition which ranges from 2 lb. to 12 lb. per cubic foot. This light weight, plus extremely low water absorption,



A variety of typical shapes are shown. This material has good electrical properties, is a good heat insulator, and is lightweight and extremely buoyant.

creates a great buoyancy. The compression moulding range of the new material runs from 1½ psi to 150 psi, depending on the type of product required. Insulation value

**IF**—your manufacturing schedule calls for a plastic moulding to close tolerances, in any colour, and, above all, in strictest confidence, consult without delay

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CUSTOM MOULDERS IN ALL THERMOPLASTICS

is illustrated by a K factor of 0.20 or less, depending on density. Excellent electrical properties are claimed. The material is non-toxic, odourless and tasteless. The company anticipates wide usage of the material in flotation and in special insulation. However, it is emphasised that this expanded plastic will not replace cellular rubber. It is inherently thermoplastic, and this disqualifies it for functions now best performed by cellular rubber.

### COFFEE BY THE SPOONFUL.

Partitions or baffles serve as automatic measuring devices in two new coffee dispensers which are moulded of plastic. The dispensers eliminate the need for using spoons or measuring cups which must be cleaned and are easily misplaced. The use of plastic makes the dispensers light in weight, colourful, and easy to keep clean.

One of the new dispensers is the "Tipit", a canister which has the measuring mechanism built into its transparent cover.



Accurate coffee measuring canister has polystyrene body and cover. Knob on lid discharges coffee from four chambers, each with enough to brew one cup.

Lustrex polystyrene is used to mould the opaque canister in bright kitchen colours, and the same material is used for the clear transparent cover.

The cover of the "Tipit" has four compartments which can be filled with coffee by tipping the canister. Each compartment holds enough coffee to brew one cup. A knob on the top of the

cover rim opens a shutter at the bottom, thus releasing the contents of each compartment.

Another dispenser, the "Coffee Measure Master", screws onto the neck of a glass coffee jar. It is designed so that the right amount of coffee for one cup is dispensed each time the jar is tipped.

This dispenser consists of three parts which are moulded of "Tenite" cellulose acetate. The three parts are: the main part of the unit, a baffle which is cemented inside the unit, and a cap which serves as a spout closure.

The baffle is located so that it prevents the coffee in the jar from reaching the spout when the jar is tipped. The baffle also forms a pocket which fills up with coffee (exactly one tablespoon) when the unit is righted. There are no moving parts.

To use the dispenser, the housewife need only remove the snap-on spout cap and tip the jar once for each cup of coffee she wants to make, holding the jar each time until the coffee stops flowing.

### LAMINATED PLASTIC SCALES.

High quality scales to which the name "Presure" is applied are being made in England. The material employed is a high-grade paper-laminated phenol formaldehyde, which combines strength with lightness, flexibility, and stability. The body is cut to shape on a high-speed routing machine and is then coated with several sprayed layers of white synthetic paint. After spraying, the scales pass through an infra-red oven, where the paint is stove hardened, and are then hand-worked to the desired surface finish.

Next the form of a brass die is moulded into the white surface under the application of heat and hydraulic pressure of about 0.5 ton per sq. in.

Finally the dividing lines impressed by the die are filled in with black filler, and the whole surface is polished to render it impervious to dirt and grease.

(Turn to page 49.)

## NOW...ONE NAME ONLY FOR ALL MONSANTO STYRENE:



In order to simplify the identification of Monsanto plastic moulding powders, all Monsanto styrene is now known as Lustrex. This one trade-name covers all Monsanto styrene formulations including the one previously known as Lustron. However, the several Monsanto special formula modifications to suit particular applications will be designated with suitable suffixes as shown in the table at right. This will make for convenience in ordering the correct grade of Monsanto Lustrex styrene for your needs.

|                                                |                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>LUSTREX</b>                                 | One well-known name for all Monsanto styrene.                                                             |
| <b>LUSTREX L</b>                               | Regular styrene, formerly Lustron.                                                                        |
| <b>LUSTREX LH</b>                              | Heat-resistant styrene, formerly Lustron.                                                                 |
| <b>Special formulations for specific uses:</b> |                                                                                                           |
| <b>LUSTREX L-PIL</b>                           | General purpose styrene.                                                                                  |
| <b>LUSTREX L-PI</b>                            | Transparent colours and crystal with superior clarity.                                                    |
| <b>LUSTREX L-PIK</b>                           | Improved mouldability over L-PIL; available in crystal only.                                              |
| <b>LUSTREX L-PIA</b>                           | Improved mouldability in transparent colours.                                                             |
| <b>LUSTREX L-PIS</b>                           | Translucent and opaque colours with exceptionally good mouldability.                                      |
| <b>LUSTREX L-X-PIL</b>                         | All the excellent properties of L-PIL plus highest heat-resistance of any commercially available styrene. |

For full information about Monsanto's styrene, Lustrex, as well as other Monsanto plastics, contact:

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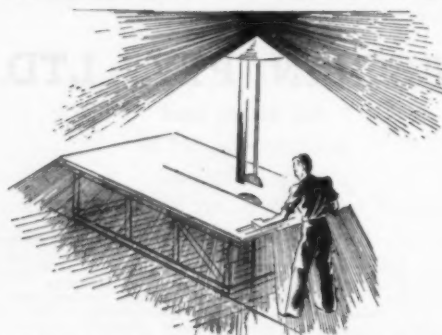
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(Continued from page 47.)

The edges of the scales are finished on a routing machine.

### PLASTIC FILM-SHEET GUIDE.

To keep plastic film and sheet materials moving in a straight line to or from processing operations, and in perfect alignment



Materials Guider for Plastics.

for uniform winding on rolls, a precision guider has been designed. Material is guided by a tilting pair of nip rolls constantly under pressure to assure positive control. When the edge of material being wound tends to move laterally, it contacts and turns a grooved and fluted wheel which, through a slipping clutch, actuates the guiding function of the nip rolls.

### FAREWELL TO FUSE BOXES.

The old fashioned fuse boxes, a mystery to the average housewife, to-day are slowly but surely being replaced by plastic circuit breakers. The new breakers are sold to the ultimate consumer as components of a metal-cased household load centre, containing multiple breaker units.

The circuit breakers, which are chiefly composed of phenolic parts, are automatic in operation. The breakers open when too much of a load is placed on the wiring. When a short-circuit occurs which causes one of the breakers to trip, service is restored simply by resetting the circuit breaker which has opened, thus eliminating the necessity of replacing a fuse or calling for a repairman.

Several companies are now engaged in producing these circuit breakers. One breaker contains 4 to 5 oz. of moulded phenolic parts. These parts cost in the neighbourhood of about 12 per cent. of the manufacturing cost of the finished product. Other material costs, such as silver and copper, account for over 50 per cent. of the production cost. To-day, the maker states that it is producing the circuit breakers at the rate of 200,000 per month.

Another line of breakers, which are moulded of Bakelite phenolic, were first made with a cold-moulded material. However, because of arc tracking across the material, the firm redesigned the breaker and switched to moulded phenolic. The amount of phenolic used in this breaker varies from 35 to 55 per cent. of the total material, depending upon the size of the breaker. The makers say that the breaker has proved itself in more than 10 million installations.

It is reported by electrical companies that the average cost for servicing the new plastic circuit breakers is approximately 10 per cent. of that in systems where fuses are used.

To-day, the circuit breakers are not only replacing the fuse boxes in existing buildings, but, to a large extent, are being applied in new construction.

Replacement of the old fuse boxes is quite simple and inex-



To-day's modern circuit breakers are composed largely of moulded phenolic parts. Since the units are decorative, they may be placed anywhere in the house.

pensive. In new construction, load centres need not be relegated, for reasons of appearance, to the basement. Since they are decorative in design, they may be placed anywhere in the house.

### MALEIC ANHYDRIDE.

Commercial production of maleic anhydride in briquette form has been announced by Monsanto Chemical Co. The absence of dust and fines, which are screened out, and the small exposed surface per unit weight (which makes possible minimum moisture pickup and subsequent hydrolysis) promises increased interest for the product in fields such as pharmaceuticals, wetting agents and plastics.

### INK FOR POLY-ETHYLENE.

Available in a complete line of colours, a new ink for screen and rotogravure printing on polyethylene is now being offered in limited quantities. The ink, which was developed overseas, can be firmly heat-bonded to the base material with no danger of flaking or picking, according to the producer. It is reported that printed designs will resist pulling

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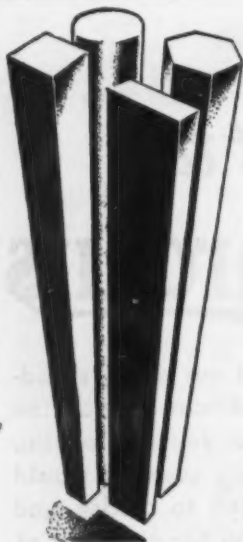
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The following classes and grades are standard:

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- GRADE 2—Semi-Freecutting Steel.
- EXTRA SUPER—Freecutting.
- LEADER—Freecutting for specialised purposes.
- GRADE CH2—Case hardening.

## PRECISION GROUND—

Supplied in all "Marbrite" Grades, to Standard or Special Tolerances.

## BRIGHT ALLOY STEELS—

- "MARBRITE" L5—3 per cent. Nickel—Case Hardening.
- "MARBRITE" Q5—Nickel Chrome—Case Hardening.
- "MARBRITE" L10—Nickel Molybdenum—Case Hardening.
- "MARBRITE" Q7—Nickel Chrome—High Tensile.
- "MARBRITE" R4—Nickel Chrome Molybdenum—High Tensile.

## AIRCRAFT STEELS—

### To Standard Specifications

"MARBRITE" Rounds, in Grade CH2 and other suitable grades, can be supplied oversize to provide for grinding, after heat treatment.

Special Sections—A comprehensive range is available against order.

Precision ground bars are manufactured to Standard tolerances with a wide range of Round sizes from 1in. to 6in. diameter. Table A tolerances are within  $\pm .000$ — $.002$  down to within  $\pm .00025$ — $.00025$ .

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off masking tape, finger-nail scratching, and bending tests.

A screen printer with a suitable type of belt dryer can employ these inks without modifying his equipment provided his plant is equipped with a high-type dryer. Heating in an oven at a temperature of 250 deg. F.

for 7 minutes is normally adequate. If no oven is available, the operator may prefer to utilize application of a gas flame as a method of bonding the ink. Printed designs have a matte finish when bonded at oven temperatures and a slight gloss when flame treated.

In rotogravure printing, tests have shown that a printing speed of 60 ft. a minute is feasible with such heating between applications as is available with standard equipment. Favourable adhesion characteristics require that the printed sheet be heated

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to a critical temperature of about 200 deg. F.

The printing problem has long been recognized as one of the principal factors handicapping more widespread development of polyethylene film, especially when it is intended for home furnishings or for packaging that requires display printing. Since polyethylene contains no plasticizer and is unaffected by solvents at room temperature, it is difficult to make ink adhere to the polyethylene surface. It is almost like printing on a metal surface because there is little absorption and no surface dissolving. Furthermore, because of its versatility, polyethylene is used for many diverse purposes, and an ink which might be satisfactory for packaging might not be satisfactory for consumer film. Another problem is that the ink must withstand stretch. Producers of the new ink believe that they have taken a long step forward in solving some of these problems.

## PLASTIC HATS FOR HORTICULTURE.

To aid agriculturists and home gardeners in promoting germination of seeds, speeding growth of plants, and protecting plants from frost, transparent caps of cellulose acetate butyrate and polystyrene are now being manufactured to replace commonly used paper caps. It has been estimated that the average plastic cap can be re-used for at least five years, as compared to the required use of two paper caps per plant per year.

The plastic caps, it is claimed, not only have a much longer life but they can be installed many times faster than the paper ones, thus effecting labour savings on installation.

Field tests indicate that seeds mature six to eight days earlier when planted under the plastic caps than they did under the paper caps. The faster growth is credited to the fact that the temperature is approximately 15 degrees higher under the butyrate cap.

Easily tipped for weeding or for ventilation, the plastic caps are installed by setting them in place and covering their flanges with soil to hold them down.

The polystyrene caps are moulded of Lustrex. The cost of the plastic cap is more than the

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paper ones they replaced, but if used on a large scale, save labour costs. This, plus faster maturity of the plants gained through the transparency of the plastic, plus the long life of the plastic caps, more than compensates for the high first cost.



Seeds are said to mature earlier when planted under butyrate caps.

Initial trials on the plant protectors showed that seeds planted in 500 hills and covered with the polystyrene bowls resulted in a 100 per cent. yield. Further tests indicated that one man, using a low cart drawn by a small garden type tractor, could install 500 caps in 30 minutes—normally an all-day job with paper caps.

Both of these plastic caps are made in several sizes. In addition to the advantages already listed, their transparency permits observation of plant growth without removing the cap. Here again is a case where only a plastic material could do the best job at reasonable cost!

### BRICK TROWEL HANDLE OF BUTYRATE.

When an overseas firm redesigned its brick trowel handle in plastics, several important improvements were noted.

Bricklayers use trowel handles as hammers to set bricks; the new Tenite II cellulose acetate butyrate handle is reported to outlast wood handles by as much as eight to one under this punishment.

Masons who are working near live wires like the protective in-



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sulation the plastic provides; the wood handles had metal ferrules and caps that could carry current. The plastic stands up perfectly to attack by sand, lime, and cement.

In the assembly of the trowel, several steps are saved by the use of the plastic handle. Formerly, the joint between the steel ferrule and the wood handle sur-



Brick trowel handle of butyrate simplified assembly. Time is simply driven into the plastic.

face had to be ground; both the wood and the metal ferrule had to be polished and varnished; assembly involved handling three

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parts—wood handle, ferrule, and cap. In the new trowel, the time is driven into the handle.

Priced slightly higher than the wood-handle trowel, the product has had good acceptance. Many bricklayers now want only plastic-handled trowels.

### NEW MEMBERS.

#### VICTORIAN CHAMBER OF MANUFACTURES.

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Arctic Refrigeration Service—Refrigeration Service.  
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Bryant, H. R.—Uniforms.  
Brygel, G.—Underwear Manufacturer.  
Buntine, W. S. & Co.—Sporting Goods.  
Carnegie Plating Works—Electroplaters.  
Clymo, Keith—Tailor.  
Crash Repair Co.—Metal Polishers and Electroplaters.  
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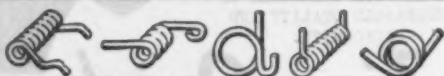
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## Bituminous Plastics

### Some Typical Mouldings and Production Methods

Bituminous plastics constitute one of the oldest branches of the plastics industry, but the technology of their manufacture, although comparatively simple, seems to be a closed book to many in the industry. They possess none of the charm of many of the newer plastics and are therefore apt to be regarded as unworthy of notice. It is proposed here to describe the process of manufacture of some of the typical bituminous mouldings, giving details of some of the difficulties encountered and the manner in which they may be overcome.

**ALTHOUGH** bitumen has been known and used since the time of the Flood, bituminous plastics were only introduced towards the end of the nineteenth century to meet the rapidly growing needs of the electrical industry for large numbers of insulators which would withstand high voltages in all weathers. The material was referred to vaguely as composition.

The terms pitch, bitumen, asphalt and bituminous are often loosely applied and not properly understood.

Pitch is used to describe the dark coloured residue formed on distillation of coal tar and certain coal tar products, wood tar, bones, certain oils, fats, etc. Coal tar pitch is the most important and is the one mainly used in bituminous plastics.

Bitumen is the residue from petroleum oils. It may be formed by natural processes in the earth's crust or prepared as a residue by the distillation of crude petroleum. Gilsonite is an example of natural bitumen.

Asphalt is a mixture of bitumen and mineral matter produced either mechanically or occurring naturally, as for example, Lake Trinidad asphalt.

The adjective bituminous, apart from its use to describe certain types of coal, appears to be a collective one to describe all materials similar to pitch and bitumen, irrespective of their origin. Bituminous plastics will thus include all materials manufactured within the plastics industry containing pitch or bitumen as the main binder.

The outstanding advantage of bituminous plastics is their cheapness. The raw materials used are also in comparatively plentiful supply. The mouldings are good electrical insulators and withstand rigorous weather conditions. The types used for battery boxes are, of course, resistant to dilute sulphuric acid.

However, these materials are weak mechanically, the tensile strength being of the order of 800 lb./sq. in. and the impact strength (notched Izod) 0.15 ft. lb. Although they are of poor appearance, having a somewhat dull black surface, it is possible to spray the mouldings if a protective sealing coat is used to prevent bleeding through the finished surface. A solution of shellac in industrial alcohol has been used for this purpose. Bituminous materials are also unsuitable for mouldings requiring a close dimensional tolerance.

#### RAW MATERIALS—BINDERS.

The raw materials used in the manufacture of bituminous plastics, says B. A. Turner, B.Sc., A.R.I.C., A.P.I., in "British Plastics", may be divided into two sections, binders and fillers.

Binders described here are coal tar pitch, and petroleum bitumen and natural bitumen such as gilsonite and rafaelite.

Coal Tar Pitch: When coal is subjected to a process of destructive distillation or carbonization in gasworks retorts or coke ovens a wide variety of compounds is produced. The crude products fall naturally into five main sections: crude coal gas; crude

spirit; ammonia liquor; coal tar; coke.

Coal tar is usually distilled by a batch process in which the various fractions are taken off in order of their distilling ranges, leaving a residue of pitch which is run out from the still. After removing the light oils and water, the crude tar is distilled to 300-350 deg. C., leaving pitch. The distillate is fractionally condensed, the fractions separating in the inverse order of their distilling ranges.

The properties of the pitch will be influenced by the type of coal carbonized, the temperature of carbonization and the final temperature of distillation of the coal tar. In general, high carbonization temperatures (1,150-1,350 deg. C.), such as are used in horizontal retorts and coke ovens produce pitch which is higher in aromatic compounds and "free carbon" than that pro-

duced in vertical retorts carbonizing at 900-1,150 deg. C. Even lower free carbon percentages are produced in the pitch from the low temperature (below 900 deg. C.) carbonization of coal. These low temperature pitches are used extensively for the production of coloured pitch mastic flooring. The final temperature of distillation of the coal tar will affect the softening point of the pitch. At the extreme lower end, distilled or road tars are produced, while if taken to the other extreme, pitch coke would remain. Free carbon is defined as that portion of the pitch which is insoluble in hot toluene. It probably contains some carbon in the free state but has been shown to contain a fraction which is soluble in pyridine.

Pitch is quoted as a classical example of a very viscous liquid, although in the case of hard pitch as used in plastics the

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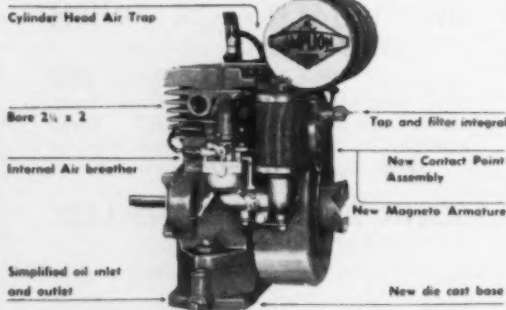
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amount of cold flow is negligible for practical purposes. On heating it becomes progressively softer, passing through the stages of a soft solid to a liquid whose viscosity decreases with further rise of temperature. These changes occur over a wide temperature range, pitch having nothing approaching a sharp melting point. The temperature at which pitch reaches a certain consistency may be measured with reasonable accuracy provided that the conditions of test are carefully laid down and rigidly adhered to. The ring and ball test is in common use for pitch for the manufacture of plastics.

The softening point of the pitch used for plastics is of great importance and each fresh delivery should be sampled and tested. The pitch should be free from grit or other extraneous matter. This may be tested for by determination of ash which should be very low, certainly below 0.5 per cent. The specific gravity, which will vary with the origin and the softening point of the pitch, is about 1.2-1.3.

**Petroleum Bitumen:** Crude petroleum contains a large number of organic compounds, many of which are known composition. The most striking difference between its chemical constitution and that of crude coal tar is that aliphatic compounds predominate in the former and aromatic compounds in the latter.

Petroleum bitumen is left as the distillation residue of the asphaltic type of crude petroleum. The final distillation products of the paraffinic crudes are oils and waxes, not bitumen. As is the case with coal tar pitch, the consistency of the bitumen will be determined by the stage to which the distillation is carried. The Central Bitumen Pool of the Petroleum Board, the article points out, at present market nine grades of straight-run bitumen with softening points, ring and ball, varying between 28 deg. C. and 120 deg. C. The softer grades are classified according to their "penetration," which is the depth in tenths of a millimeter to which a standard needle penetrates the sample at 25 deg. C. during a period of 5 seconds, the needle being weighted with a load of 100 grams.

Like coal tar pitch, the softer grades of petroleum bitumen are sticky, viscous liquids while the harder grades are brittle solids giving the conchoidal fracture characteristic of amorphous materials. On heating, bitumen also passes through the stages of a soft solid passing to a viscous liquid, but the changes occur over a much wider range of temperature than the corresponding changes for pitch. In the case of road tars which may be regarded as very soft pitches, the curve of viscosity against temperature is far steeper than that for corresponding grades of bitumen. This difference will be noticed by comparing different road surfaces during a heat wave. The tar roads show a

(Turn to page 57.)

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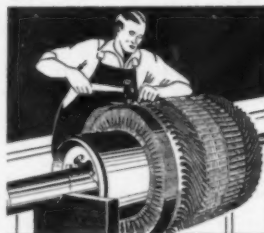
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(Continued from page 54.)

much greater tendency to soften under such conditions than do the bitumen roads. Another physical difference is that, unlike pitch, bitumen possesses to an appreciable extent the property of elastic deformation.

Bitumen contains no "free carbon," being almost completely soluble in many organic solvents. The usual specification calls for a minimum of 99 per cent. soluble in carbon disulphide. It is of much lower specific gravity than pitch, varying from 1.0 to 1.1 at 25 deg. C./25 deg. C. The fumes evolved from hot bitumen are less objectionable than those from pitch and are comparatively harmless.

In view of the many differences it is not surprising that pitch and bitumen are not compatible in all proportions. As a rough guide it may be assumed that with 100 parts of pitch may be mixed up to 25 parts of bitumen by weight and vice versa. Serious loss of binding properties is likely if these limits are exceeded.

**Gilsonite:** In 1885 Captain Samuel Gilson discovered a hard, brittle, bituminous substance in the Uintah Basin of Utah and named it Gilsonite. It is a natural bitumen resembling petroleum bitumen in many of its properties.

It is marketed in two grades—Standard Gilsonite and Gilsonite select. The select grade is preferable for plastics manufacture on account of its lower and more uniform softening point and its comparative freedom from mineral matter.

Gilsonite is a good electrical insulator and is resistant to weather conditions and to the action of acids and alkalis. Its specific gravity is ca. 1.03 at 20 deg. C.

**Rafaelite:** Another natural bitumen known as Rafaelite is mined in the Argentine. It may readily be distinguished from Gilsonite by the fact that when rubbed on a porcelain surface it leaves a black streak whereas Gilsonite leaves a brown streak. Its specific gravity is somewhat higher than that of Gilsonite—ca. 1.10 at 20 deg. C.

Rafaelite has the very high softening point of ca. 180 deg. C. and at even higher temperatures is reluctant to flow except under pressure. It is soluble in aromatic and chlorinated hydrocarbons and in carbon disulphide but in general has a lesser com-

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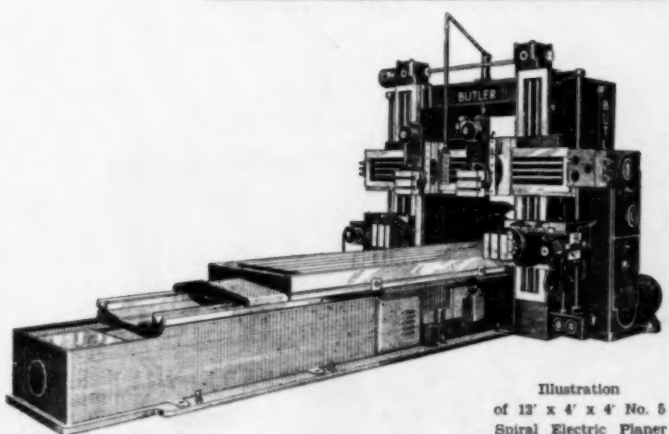


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patibility than Gilsonite. Rafaelite is, however, more compatible with pitch, and this fact, together with the colour and higher specific gravity, seems to suggest that it is more aromatic than Gilsonite in character.

### RAW MATERIALS—FILLERS.

Several types of fillers are used in bituminous plastics. They in-

clude various forms of asbestos, slate dust and silicon, characteristics of which are given here.

**Asbestos:** Serpentine asbestos (Canadian asbestos or chrysotile) is the type mainly used as a filler in bituminous plastics. It is found in all localities where serpentine-rock occurs (e.g., in the Lizard district of Cornwall) and is mined extensively in

Canada, Russia, South Africa and the United States.

**Crocidolite** or South African blue asbestos is a mineral of the soda-amphibole group. It is mined in the Asbestos Mountains in Griqualand West, South Africa, where it occurs as veins 1 or 2 in. in thickness. For use in bituminous plastics it should be free from grit and other non-fibrous

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impurities. Being far more resistant to acids than other types of asbestos it is the type largely used in the manufacture of battery boxes.

Slate Dust: Chemically, slate is mainly aluminium silicate; some of the iron it contains is extractible with hot dilute sulphuric acid indicating that slate dust is

unsuitable as a filler for battery boxes. Pulverized slate is screened according to the desired particle size. A usual specification for slate dust as used for bituminous plastics is that 85 per cent. shall pass a 180 mesh sieve. Although an inexpensive filler it is remarkably consistent and free from undesirable impurities.

Silica: Sand of different degrees of purity is found in various parts of the world. Various processes of purification such as a gravitational and magnetic separation, acid washing, etc., are carried out according to the properties of the sand and the purity of the silica required. The requirements for battery boxes are

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not so exacting as for the manufacture of good quality glass, but iron content and particle size are important.

Silica is a hard, abrasive material and the absence of large particles is necessary to avoid scratching or undue wear of mould surfaces.

#### INSULATOR MOULDING MATERIAL.

Insulators moulded from bituminous material must withstand considerable mechanical stress as well as retaining their insulating properties when exposed to the weather. Coal tar pitch is the most suitable binder for this purpose since it may be hardened to the required degree by the loss of volatile oils. Its softening range, sharper than the bitumens, allows for sufficient flow at mixing and moulding temperatures while remaining hard and rigid in use.

Mechanical strength is obtained by the use of a fairly large proportion of serpentine asbestos. The actual grade used will determine the mechanical properties of the insulator, which will be better if longer fibres are used. Great care must, however, be taken to ensure that no hard tufts remain since they would become merely coated and not impregnated with the molten pitch, and in wet weather provide a conducting path.

The requisite hardness is obtained by the incorporation of slate dust, the particles of which tend to fill the small spaces between the asbestos fibres, rendering the insulators dense and non-absorbent. In order to obtain the necessary mechanical strength the binder content for insulators is somewhat lower than for other types of bituminous materials. Approximately equal weights of pitch, serpentine asbestos and slate dust are found to give satisfactory results.

#### MIXING.

Slow-moving open-trough mixers of the Werner type are mainly used for mixing. It is essential that the blades are properly designed to suit the material, otherwise lack of uniformity will result. The best method of heating is by oil jackets with a pump capable of giving a fast circulation. The actual temperature, which will depend on the softening point of the pitch used and the required heat resistance of

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the insulators, will lie within the range 220 deg.-270 deg. C.

During the process of mixing, three changes occur:—the pitch becomes fluid; the molten pitch mixes intimately with the filler particles; and finally certain volatile oils are lost from the pitch, thereby hardening it.

It should be noticed that this loss of volatile oils is essentially a process of evaporation rather than distillation. The temperature at no time reaches 300 deg. C., which is the minimum temperature at which any oil may be distilled from pitch. It is almost certain that the fumes contain a small proportion of 3:4 benzopyrene. For workers who expose themselves to pitch fumes the effect of this chemical is cumulative and after several years' exposure to the fumes, pitch warts, a form of skin cancer, are liable to appear. The remedies are for the factory to be adequately ventilated to remove the fumes and for the workers to wash the exposed portions of their skin well with soap and hot water. Workers handling the solid pitch should use a barrier cream before starting work or remove any particles of pitch with linseed oil followed by soap and hot water.

It is important that the material be brought to a pre-determined hardness within fairly close limits, since if the material is too soft the heat resistance of the insulators will be inferior, while too hard a material is difficult to mould. The actual mixing time is quite critical, since as the temperature of the material rises, so also does the rate of loss of volatile oil.

## PREFORMING.

It is convenient for the material to be pressed into preform blocks in order to lessen its bulk and make for easier handling. It is possible to re-heat the granular material before pressing the blocks, but it is much better for the blocks to be moulded from the hot material as it is turned out of the mixer, without delay, since after about 20 minutes the material becomes too hard to be compacted. A fast-moving mechanical press giving a pressure of 30-40 tons is convenient for this operation.

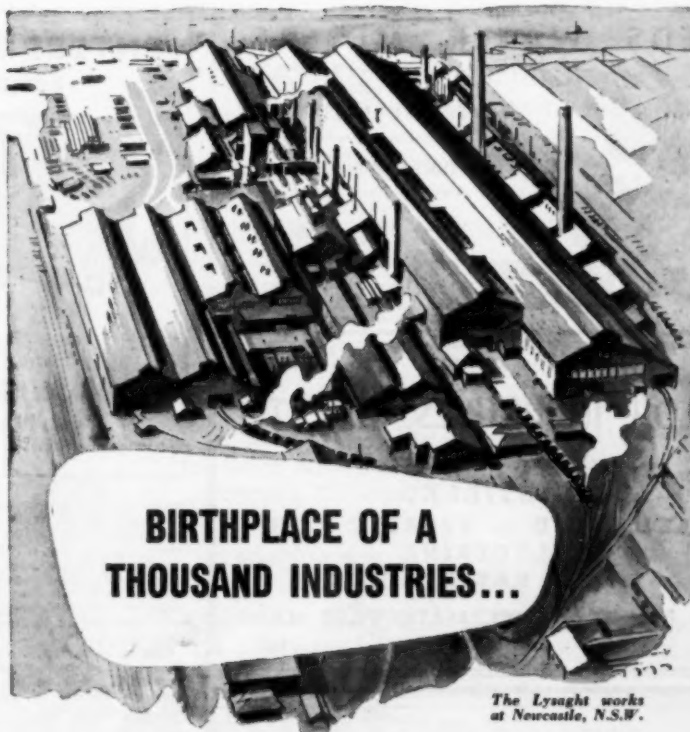
## MOULDING OF INSULATORS.

The moulding of bituminous material is sometimes classified under the heading "cold moulding" because the mould itself is

cold. The hot preform block is placed in the cold mould, the pressure being applied and held for 10-20 seconds for the material to cool sufficiently to allow for extraction without distortion. In practice, however, the mould is maintained at a temperature between 40 deg. and 100 deg. C. The top tool usually derives suf-

ficient heat from the hot material and may have to be cooled, but the bottom tool is heated by means of a suitably adjustable source of heat such as a ring-type gas burner. Positive moulds are used and high pressures of 10-15 tons/sq. in. are needed for proper consolidation of the material. The female thread in the

centre of many types of insulator is moulded by means of a threaded pin which is held in the top tool by a lightly spring-loaded ball so that it remains in the moulding, from which it is unscrewed after the press has been opened. If the insulator is of the type requiring a screw cap, the threaded portion is



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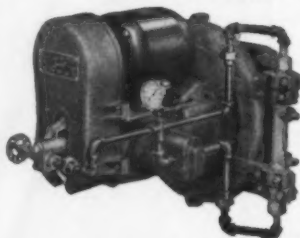
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moulded by means of a ring,  
threaded on the inside, which is  
unscrewed from the insulator  
after extraction. The wire  
grooves on the outside of the in-  
sulator may be moulded by means  
of the required number of split  
rings or the whole mould may be  
split and opened by means of an  
angle press.

Before moulding, the preform  
blocks must be heated in order  
to soften them to the required  
degree. Harder or softer blocks  
will require higher or lower tem-  
peratures respectively but for a  
block of approximate dimensions  
3 in. high x 2 1/2 in. diameter a  
heating time of 80 minutes at  
200 deg. C. should be adhered to.  
A reasonable tolerance for practi-  
cal working is 70-120 minutes  
where 80 minutes is required.  
Blocks of this size heated for a  
shorter time than 70 min-  
utes will be insufficiently  
heated and consequently hard  
in the centre, while if the  
time of 120 minutes is much ex-  
ceeded the blocks will become  
"case hardened" due to excessive  
loss of volatile oil from the  
pitch near the surface of the  
block. The former defect would  
give rise to a danger of broken  
pins while the latter would pro-  
duce insulators with a porous  
surface to the detriment of their  
electrical properties.

The blocks are heated in a  
convection oven. The oven,  
which is cylindrical in shape, con-  
tains a turntable so that the  
blocks can be heated in a regular  
cycle. The oven has no door,  
but a small opening at the front,  
above which is a chimney to  
carry the pitch fumes away from  
the operator. It is usual for the  
turntable to be provided with two  
tiers otherwise an unduly large  
oven would be necessary. The  
heating, which must be thermo-  
statically controlled, may be by  
gas or electricity. The gas  
burners or heating elements  
should be fitted well below the  
lower tier of the turntable to en-  
sure that the effect of heating

by radiation is negligible com-  
pared with that produced by con-  
vection. This will ensure a uni-  
form temperature, within a few  
degrees, throughout the oven.

The blocks must be of suffi-  
cient weight so that a slight  
clearance between the top and  
bottom tool remains after the  
full pressure has been applied.  
This, of course, shows that the  
full pressure has been applied to  
the moulding, not merely to the  
mould.

The British Standard Specifi-  
cation for Telegraph Material  
states that a finished insulator  
shall be immersed for six hours  
in water at a temperature of  
85 deg. C. with a weight of  
504 lb. suspended from the neck  
of the insulator by means of a  
wire looped round the wire  
groove and following the curva-  
ture of the surface of the insu-  
lator. After this period the in-  
sulator shall show no visible  
marks from the wire.

This test, often referred to as  
the Deformation Test, is a very  
useful and also a very severe one.  
It shows how the insulators are  
likely to stand the stain of the  
wire when they are exposed to  
the heat of the tropical sun.

General purpose bituminous ma-  
terial is much softer when hot than  
insulator material and may be used  
for mouldings containing small  
metal inserts. The increase in  
flow properties is obtained by  
using a higher proportion of pitch  
which may be present to the ex-  
tent of 50 per cent. or even more.  
Owing to this increased binder  
content, it is easier to control the  
consistency of this material than  
that of insulator material and up  
to 30 per cent. of scrap may be  
incorporated. The scrap may con-  
sist of insulator material or gen-  
eral purpose material but the  
necessary allowance owing to their  
different composition must be  
made.

(Turn to page 62.)





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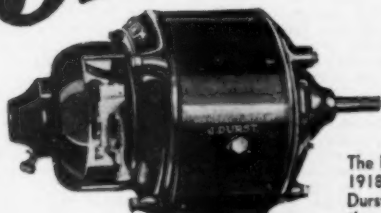
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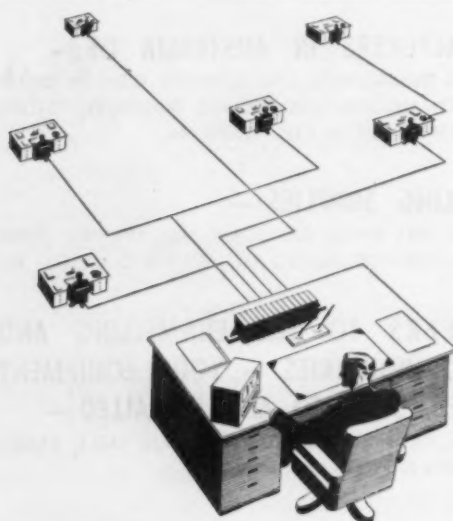


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(Continued from page 60.)

The mixing is done to a set time but it is possible to increase the heat resistance of the final mouldings by considerably extending this time. The hot material is turned out in lumps which are chopped into pieces about the size of a man's flat and allowed to cool.

### MOULDING.

Prior to moulding, the article in "British Plastics" continues, the material is heated to a temperature between 150 deg. and 200 deg. C. depending on the consistency of the material, in order to soften it. For convenience in handling, the material is heated in iron cups which are rotated on the turntable of a convection oven of the same type as used for insulator preforms. The heating time will depend on the quantity of material in each cup and on the size of the lumps; about 1 to 1½ hours is usually allowed.

The hot material is then turned out on to a thick iron plate where it is "beaten out" with a polished rod or bar of iron or steel. The process performs four main functions:—(1) It makes the material coalesce, thus ensuring that no cracks or joins appear in the moulding. (2) It reveals any solid impurities or hard lumps of insufficiently heated material. (3) It tends to bring the binder to the surface, giving the finished moulding a good surface appearance. (4) It ensures that the temperature of the material remains reasonably constant throughout the mass while it progressively stiffens as it cools until it reaches the correct consistency for moulding. The last time the sheet is rolled before moulding, the beaten side is kept outwards.

Positive moulds, necessitating accurate weighing of the material, and pressures of ca. 1-2 tons/sq. in. are used. The mould is slightly heated and the material allowed to cool under pressure to allow for extraction without distortion. To prevent distortion after extraction the mouldings are cooled quickly by immersion in cold water.

One of the most important uses for general purpose material is for the moulding of telephone terminal blocks which are used for the junctions of a number of overhead wires with the insulated wires which run underground. These mouldings carry a large number of inserts which are located in the bottom tool. Where the inserts contain female threads, screwed plugs are used to prevent the holes from filling with material.

### ACID-PROOF MATERIAL.

Battery boxes moulded from bituminous material must obviously withstand the action of the battery acid. Any small quantities of matter extracted from the material by the acid must have no harmful effect on the working of the battery. The amount of iron present in the battery acid must be kept as low as possible, while manganese is considered even more harmful.

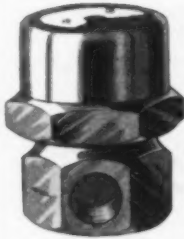
Commencing with the fillers, serpentine asbestos, as previously mentioned, is entirely unsuitable. Crocidolite, although actually a compound of iron, is far more resistant. Its long, soft fibres are easy to impregnate and it is a most useful filler to impart mechanical strength. It is expensive, but owing to its great bulkiness, a comparatively small proportion by weight is quite effective.

Silica is a suitable non-fibrous filler to impart high surface hardness and compressive strength and it is important that the iron content be low. Slate dust, although comparatively resistant to acid, is unsuitable on account of its high proportion of extractible iron.

Turning to the binders, coal tar pitch on heating with dilute sulphuric acid causes the acid to assume a greenish yellow tinge. This colour is not due to iron and it is unlikely that the material present in solution is harmful to the battery.

Petroleum bitumen is more resistant to acid but its wide softening range makes the material difficult to process. If a grade is chosen which will make the ma-

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terial soft enough to mix and mould, the battery box will be soft when extracted from the warm mould and liable to distort at such temperatures as are likely to be reached under the bonnet of a car during a heat wave.

The naturally occurring bitumens, Gilsonite and Rafacelite have higher softening points and need to be plasticized in order to make the material soft enough to manipulate. On account of its higher softening point, Rafacelite requires a greater proportion of plasticizers than is required by Gilsonite to produce the same consistency at a given temperature. Rosin is particularly useful in this respect. It is readily compatible with bitumen and is resistant to battery acid. Linseed oil is frequently used as an additional plasticizer to soften mixtures containing Gilsonite or Rafacelite. Being a drying oil, it tends to form a hard, inert film on the surface of the mouldings. Boiled oil should not be used on account of its manganese content.

## MIXING.

Approximately equal proportions by weight of fillers and binders are used to give a soft, easy flowing material with the fillers well impregnated. Open trough mixers of the Werner type, as used for insulator and general purpose materials, are generally used, although enclosed mixers of the Bridge-Banbury type are suitable for fast-  
er production provided that ade-

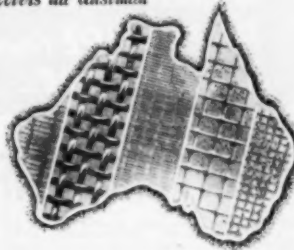
quate heating is possible. A certain amount of volatile oil is lost during the mixing, but this loss does not play an important part in the consistency of the material, which is turned out in the form of large, soft lumps as soon as it has had sufficient time to become homogeneous. A certain amount of digging is necessary to extract material adhering to the blades. In this condition it is ready to be moulded, but owing to the difficulty of synchronizing the mixing with the moulding, it is usual to carry a stock of material and re-heat it prior to moulding as required. In this case the hot material from the mixer is sheeted between cold rollers to facilitate handling. A steel plate with ridges on the underside is convenient to mark out the sheets into "biacuits" so that they may be broken up more easily into pieces of suitable size when cold.

## MOULDING OF BATTERY BOXES.

The material is heated prior to moulding in a turntable oven of the type previously described. About 10 lb. of material is required to make a car battery box and it is essential that sufficient time be allowed to ensure uniform heating. The oven should be large enough to allow a heating time of 1½ hours, the temperature being adjusted according to the consistency of the hot material.

(Turn to page 77.)

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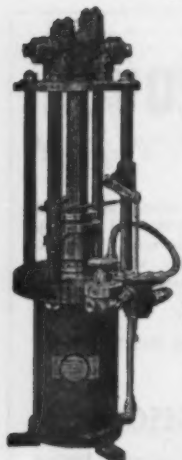
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Particulars of the necessary procedure will be supplied by any Patent Attorney practising in the Commonwealth.

### PATENT SPECIFICATIONS ACCEPTED

#### PORTABLE TRACTOR DRIVEN POWER SAW.

137,086.—C. A. Marsh, W.A.

To enable the power take off from a tractor to be used for a cross-cut saw, a wheeled frame has a drawbar connection and a take off shaft for coupling to the tractor. The shaft is coupled to the take-off shafts and drives, per medium of belt, the pitman arm to which the saw is attached. A clutch arrangement consisting of a jockey pulley for engaging the belt is flexibly mounted, the pressure on the belt being controlled by an operating lever. A saw guide and pressure arm is provided at its outer end with a grooved pulley to engage the saw blade and at its inner end with a crank member. The arm is also pivoted. The said arm applies pressure to the saw blade per

medium of the crank member, wire rope, spring and winch. A standard is provided to hold the saw when it is not in operation.

#### TRACTOR-TYPE EARTH- MOVING EQUIPMENT.

137,087.—G. C. Scott, N.S.W.

An implement attachable to a conventional type tractor for the purpose of grading pastoral land, has a curved blade or scoop angularly adjustable in horizontal plane and supported at one end of a boom which is rotatable by manually operated worm gearing and carried by a frame. The boom may be hydraulically raised or lowered.

#### FOLDING CHAIR.

137,089.—T. F. Ballantyne, S.A.

A pair of rear legs are pivoted to a pair of front legs, and arm rests and seat are pivotally connected to front legs and back rest, the lower end of the back rest being connected to the rear legs by pivoted straps so that in

the erected position the back rest will stand upon the rear legs.

#### A METAL CLOTHES PEG.

137,091.—A. Horne, Vic.

A pair of doubled resilient metal legs accommodate between their inner limbs, a clothes line, and a suspended article of clothing which engage an abutment above the upper ends of the inner limbs which are formed with resilient flanges or extensions engaging the outer limbs of the said pair of legs.

#### BOTTLE CARRIER WITH SHEET STEEL SECTIONS.

137,095.—C. Turner, Qld.

A length of sheet steel pressed to a rectangular shape with rounded corners and an inwardly projecting inner flange, has corner members attached and held rigidly by swaged or embossed interconnecting members and has swaged longitudinal base members and pressed channel section

transverse members attached to the said inwardly projecting flange.

#### RESILIENT SUPPORTING DE- VICE FOR FLEXIBLE ELEC- TRICAL CONDUCTORS.

137,097.—W. R. Beer, Vic.

To support flexible cables for electrical appliances, a base having a lateral passage and an axial hole communicating with the passage, comprises an elongated tubular member communicating with the passage and through which a flexible conductor may be extended. At least portion of the tubular member being resilient allowing the free end of same to be displaced laterally in opposition to its resilient portion by imparting a tension to the conductor extending from the free end of the tubular member.

### PATENTS, TRADE MARKS, DESIGNS AND COPYRIGHTS

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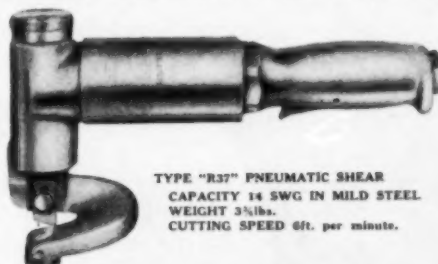
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### GATE SUPPORTS WITH TRANSVERSE TIE-BARS.

137,102.—B. M. Clapham, N.S.W.

To overcome sagging, and for expeditious erection, a gate supporting apparatus comprises two spaced substantially parallel main members, a transverse tie-bar secured to the main members, substantially at right angles thereto and inwardly at their ends, at least two diagonal bracing members, each secured to the tie-bar and to one of the posts, and means such as U bolts and nuts associated with the main members for attaching a gate frame thereto.

In a modification the tie-bar may extend outwardly of each main member, to carry an additional bracing member to each main member. An anchor plate may be secured to the lower ends of the main members.

### SUPPLYING IGNITION CHARGE.

137,106.—J. J. McIlhinney, Vic.

To eliminate the time lag in the operation of a valve controlling the supplying of an auxiliary ignition charge of volatile spirit provided in the vicinity of the spark plug, a valve, provided to close the passageway between an ignition chamber and the engine cylinder, is operated automatically or mechanically in synchronism with the inlet valve. The valve controlling the volatile spirit may be a double acting valve and the induction chamber may be disposed laterally of the passage for the auxiliary fuel.

Fuel oil is admitted under pressure and may be controlled by a mechanically operated valve synchronized with inlet valve and low and high pressure by pass valves or may pass through a vaporizer. The change from the use of petrol-air to oil-air mixture is effected automatically. In a modification adapted for use in multi-cylinder engines, each cylinder has an ignition chamber connected in series to a single supply line.

### NEW TYPE OF FRUIT GRADER.

137,110.—Pope Mayne & Southern Pty. Ltd., Qld.

Adapted for simultaneous adjustment, a series of rollers providing stepped openings in alignment with and above a horizontally disposed and inclined conveyor belt, are rotated by shaft

supported for rotation in rubber bearing blocks, and adapted to parallel adjustment relative to the belt by an eccentric bearing influencing one end of the rollers and located on the brackets which are actuated in unison by manually operated spindle.

The rollers may be rubber covered and in a modification ball bearings replace rubber bearing blocks and a disengaging mechanism

is introduced to allow for free rotation of each roller.

### A CENTRIFUGAL SEPARATOR FOR COLLOID MATERIAL.

137,112.—E. J. Foster, N.S.W.

A separator, suitable for colloid material and a liquid of lesser specific gravity and the like, includes a rotor assembly having an inverted bowl surrounding an apertured impeller trunk which

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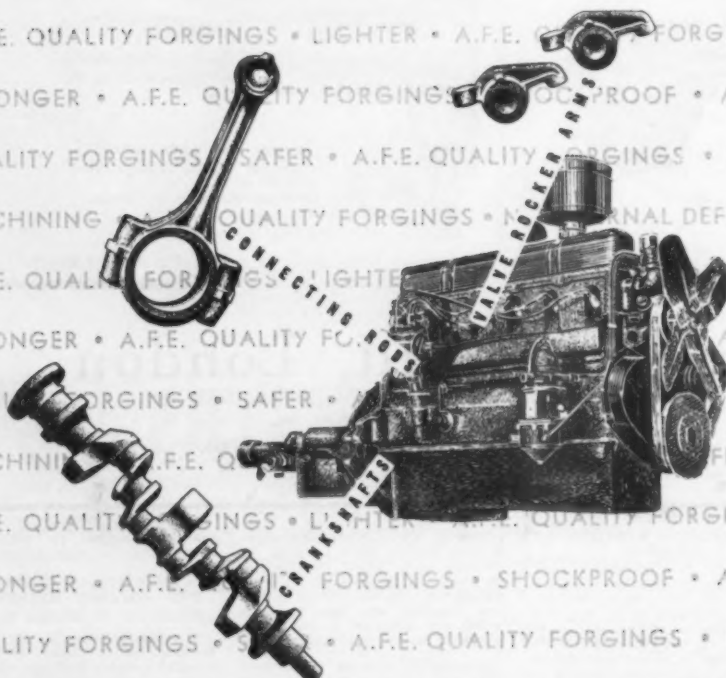
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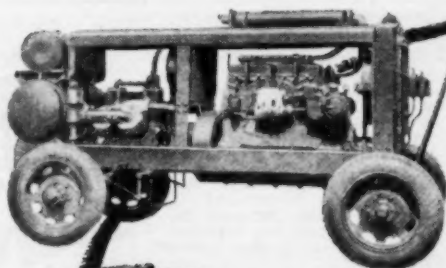
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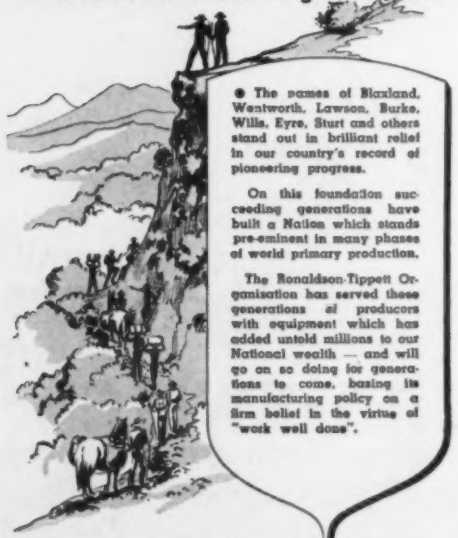
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(Continued from page 35.)

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T. H. White, 31 Rawson Street, Punchbowl—Furniture and Cabinetmaking.

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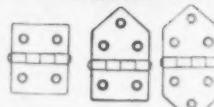
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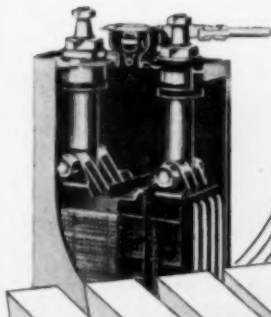
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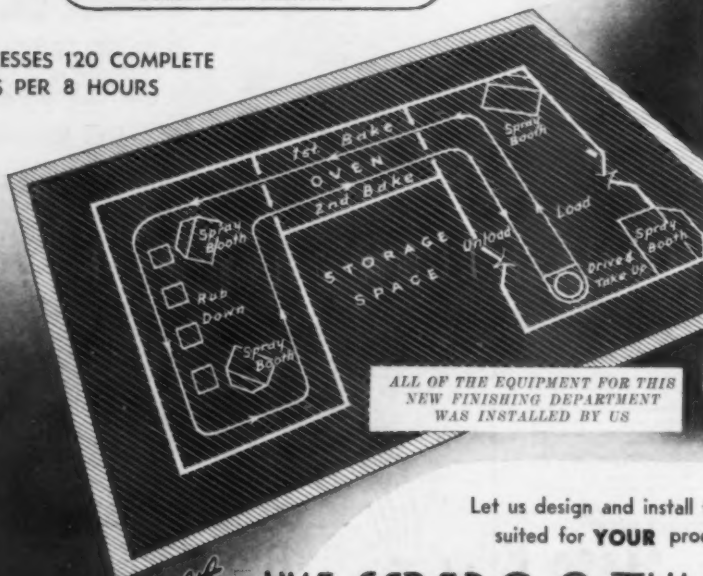
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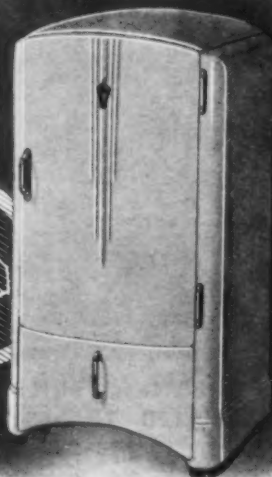
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(Turn to page 72.)

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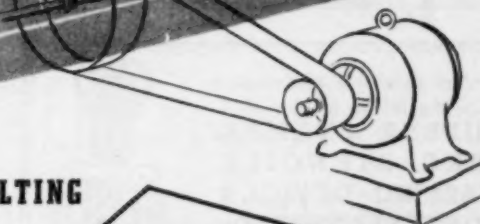
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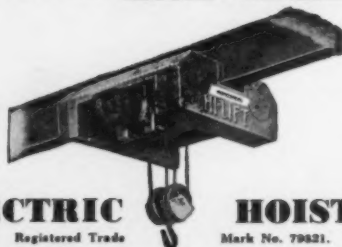
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Gauges, Scales, etc. and much more.  
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**RUBBER STAMPS,  
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FOR ALL PURPOSES**

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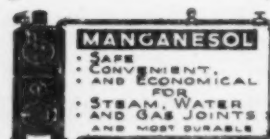
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PTY. LTD.  
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NORTH MELBOURNE  
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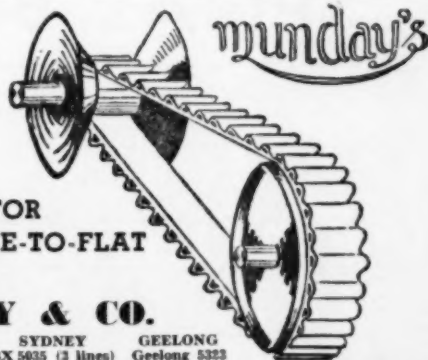
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FOR  
VARIABLE  
SPEED DRIVES  
"RIPPLE"

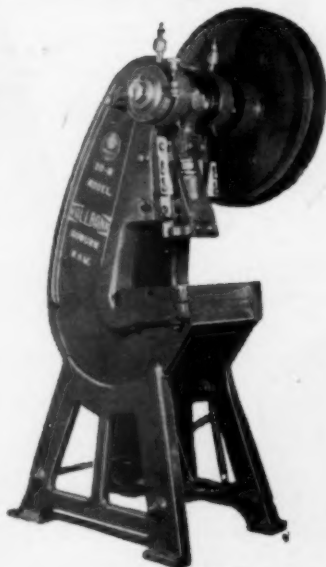
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Model illustrated, 25A.

## "WALLBANK" POWER PRESSES

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Only SPIRALS have these advantages:

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- Localised tooth bearing, allowing greater tolerance in assembly.
- Curved teeth keep lubricants between mating surfaces.
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Capacity for SPUR and CLUSTER GEARS to 8in. diam. done by the FELLOWS METHOD.

REMEMBER! These gears actually COST NO MORE than straight bevels.

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**AULD** *patent*  
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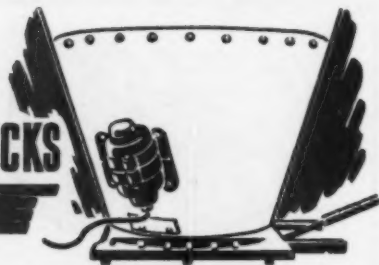
Simple in design, reliable and accurate in performance. A VALVE TO SUIT ALL CONDITIONS.  
"STANDARD" pattern, where reduced pressure is not less than 2/5ths of inlet pressure.  
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NO  
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HERE...



*Allam* ELECTRIC "TRILLOR" **VIBRATORS**

Uses include:

- Maintaining free flow of loose materials in hoppers, feeders, chutes, screens, conveyors, etc., in hundreds of manufacturing processes.

- Ensuring consolidation of powders or loose materials in drums, bags or packets — to speed up packaging and permit use of smaller containers.

EASILY FITTED TO ANY SURFACE



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N.S.W.: Writstand Distributors Ltd., 46-48 Gardeners Road, Mascot.  
VIC.: British Standard Machinery Co., 664 Bourke Street, Melbourne.  
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T.A.S.: Charles Davis Ltd., 66-68 Elizabeth Street, Hobart.  
S.A.: William Adams & Co. Ltd., 187 Waymouth Street, Adelaide.

AV130

(Continued from page 72.)

Felham Bridle Back, Light, for Repat. Artificial Limb Factories, Brisbane, Sydney, Adelaide and Perth. Zwar Bros. Pty. Ltd., £333/2/6.

Hospital Dressing, for Repat. Hospital, Concord. Johnson and Johnson Pty. Ltd., £908/17/3.

Cigarettes, for delivery at Repat. Canteen, Concord. Campbell and Beaumont Pty. Ltd., £393/12/-.

Tobacco and Cigarettes, for Repat. Canteen, Concord. W. D. and H. O. Wills Aust. Ltd., £2,449/19/6; for delivery at Prince of Wales Repat. Canteen, Randwick, £317/6/-.

Drugs and Chemicals, for Repat. Clinic, Sydney. Elliotts and Aust. Drug Pty. Ltd., £256/9/11; for Repat. Gen. Hospital, Concord, £1,034/9/2.

#### DEPARTMENT OF WORKS AND HOUSING.

Switchboard and Cable Laying at Fishermen's Bend. Electro-Mechanical Product, £1,760.

Steelwork, for the Animal House and Fleece and Shearing Shed, Prospect. Arcos Products Pty. Ltd., £3,340.

Switchboard, 11,000 volt, Nowra. Johnson & Phillips Ltd., £2,368/10/-.

Weighbridge, Sydenham Postal Stores. W. & T. Avery (Aust.) Pty. Ltd., £977.

#### SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION.

Dust Extraction Plant, for Central Experimental Workshops. Ailvent, £449/10/-.

#### STORES SUPPLY AND TENDER BOARD.

Postal Note Paper (Sch. No. C.T.B. 840). William Nash Ltd., £7,554/13/10.

Super - calendarized Printing Paper, for Commonwealth Office of Education, Sydney (Sch. No. C.T.B. 878). Wiggins, Teape & Alex. Pirie (Export) Pty. Ltd., £4,773/15/-.

Towelling (Sch. No. C.T.B. 50/96). "Dri-Glo" Towels Pty. Ltd., £1,675.

### VICTORIA

#### GOVERNMENT RAILWAYS DEPARTMENT.

Pneumatic Drill (1 1/2 in.), £58/1/-; Pneumatic Drill, Close Quarter, £68/17/-; Pneumatic Sump Pumps, £59/10/-; Pneumatic Impact Wrenches, Bolts, 3 in. dia., £83; Pneumatic Impact Wrenches, Bolts, 1 1/2 in. dia., £94; Pneumatic Wood Bore, £58/1/- (T.7638). McPhersons Ltd.

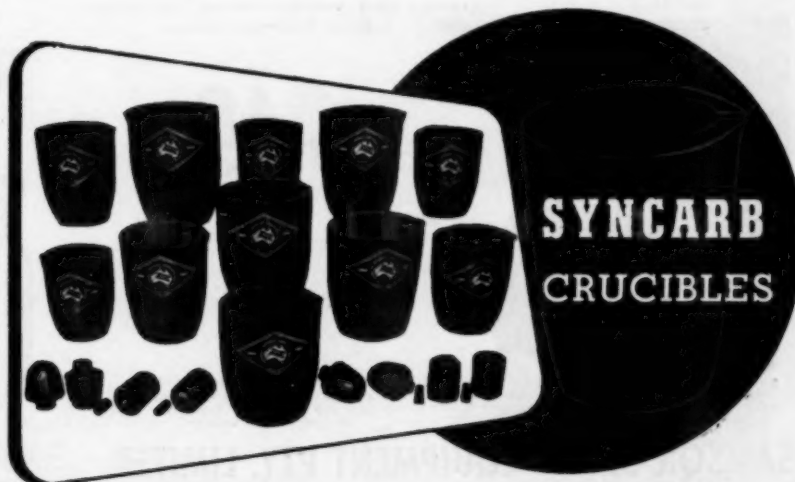
Pneumatic Grinders (Surface). Ingersoll-Rand Pty. Ltd., £84/2/-.

Pneumatic Grinders, 8 in. dia. Wheel. Ingersoll-Rand Pty. Ltd., £91/15/-.

Pneumatic Sealing Tools. Knox, Schlapp Pty. Ltd., £7/15/-.

Pneumatic Sheeting Drivers. Knox, Schlapp Pty. Ltd., £55/10/-.

(Turn to page 77.)



## MANUFACTURED IN AUSTRALIA

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Refractory Bricks and Shapes in—

SILICA, HIGH ALUMINA, KYANITE, SUPER DUTY ALUMINA, SILICON CARBIDE, MAGNESITE, CHROME, FIRECLAY.

Insulating Bricks, Shapes and Filling in Various Materials. High Temperature Cements and Plastic Refractory Materials. Thermofrax, Newbond, Sealite, Fused Alumina, etc.

Silicon Carbide Mullite, Fire-clay Mullite, Crucibles.

Syncarb graphite crucibles are bonded entirely by carbon residues and offer, as a result, a number of cost-saving and operating advantages over conventional-type crucibles, as, for instance, lack of any necessity for annealing before being put into service.

Other advantages of Syncarb crucibles include—higher refractory characteristics, making for longer life at higher temperatures . . . self-glazing properties, preventing oxidation . . . higher thermal conductivity, making for faster melting.

Cost-minded foundrymen, looking for ways to save fuel, save on crucibles and increase metal pourings, will investigate Newbold Syncarb—the improved graphite carbon-bonded crucible that will not spall, scalp or crack.

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SERVICE  
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A precision Grinder with a speed of 90,000 R.P.M.  
Suitable for work on 60-100 lbs. per sq. inch. No  
tool-room can afford to be without one. Designed to  
increase output and lower production costs.

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Paint Spraying Guns for every purpose, Spring Spraying Guns, Water Guns, Air Cleaning and  
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Automatic Guns for Offset Elimination and Multiple  
Spraying. Complete Compressor Outfits.



OIL AND WATER SEPARATORS  
Designed to remove oil and water  
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(Two other sizes available.)



THE SAMSON TYPE A.1. SPRAY GUN.  
Skillfully engineered after giving sound and practical  
consideration to all phases and problems of Spray  
users where 100% finishing must be obtained at the  
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Set-Ups enable this Gun to be readily adapted to any  
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MECHANICAL, ELECTRICAL & CIVIL  
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# EYELETS

o o *tremendous  
trifles in metal*

\* Leaders in mass production of meticulously accurate small metal stampings.



EYELETS PROPRIETARY LTD.  
WINDSOR, VICTORIA

(Continued from page 75.)

**Pneumatic Concrete Breakers.** Whyte Stall British Products, £46/10/-.

**Pneumatic Clay Diggers.** Whyte Stall British Products, £26.

**Portable Concrete Mixers.** R. Bryce & Co. Pty. Ltd., £92.

**Solid Rubber Wheels.** Dunlop Rubber (Aust.) Ltd., £30.

**Hacksaw Machine.** (7656). H. L. Edmondson, £78/10/-.

**Bedside Tables.** (300), (7655). H. F. Froher & Sons, 86/5, each less 21 per cent.

**Point Detection Transformers** (7657). Trimax Transformers Pty. Ltd., £3.

**General Hardware.** No. 2, during period 1/7/50 to 30/6/52 (Sch. 193). McPherson's Ltd., Kelson Trading Supply Pty. Ltd., Brisbane & Co. Ltd., Hart & Co. Pty. Ltd., Crown Crystal Glass Pty. Ltd., Bell's Asbestos & Engrg. (Aust.) Ltd., Industrial Hardware Pty. Ltd. Rates.

**Polishes, Case Hardening Composition, etc.** during period 1/7/50 to 30/6/52 (Sch. 194). Nuggett Polish Co. of Aust. Ltd., W. K. Burnside Pty. Ltd., Spartan Paints Pty. Ltd., G.U.D.

**Manufacturing Co. Ltd., The Steel Improvement Co. Ltd., W. E. Fuller (Pty.) Ltd., Hart & Co. Pty. Ltd., Hilleton Manufacturing Co. Rates.**

**Light Furnace Oil** (Con. 58,248). Commonwealth Oil Refineries Ltd. Rates.

## DEPARTMENT OF PUBLIC WORKS.

**Equipment, for Pentridge Gaol.** Anderson & Ritchie Pty. Ltd., £395/16/-.

**Equipment, for Mental Hospital, Kew.** W. E. Tuck, £182/15/-.

**Heating, for Ringwood East.** T. W. Fitcher & Son Pty. Ltd., £58.

**Fly Wire Screens, for Nhili Cookery School.** M. G. Mulhellen & Son, £37/1/5.

**Heating, for Prefabricated School.** Crockford & Robertson, £1,994.

**Equipment, for Mental Hospital.** R. Burton & Co. Pty. Ltd., £1,030.

**Rotary Clothes Lines.** H. J. Faulkner, £18/10/-.

**Equipment, etc.** McPherson College of Domestic Economy, Brice Scale & Slicer Co., £397.

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## SPRING WASHER KIT

A handy "tool" for every Tradesman, Engineer, Mechanic, Garageman, Farmer, Handyman to have on hand . . .

No need to search for a spring-washer when you've got an assortment of Henderson's high-grade spring-washers in your workshop — packed in a strongly-built "knock-about" metal cabinet with convenient hinged lid, and with each of the eight sizes in its own compact compartment ready for choice.

OBTAINABLE FROM ALL WHOLESALE, HARDWARE STORES AND GARAGES THROUGHOUT AUSTRALIA

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**Fly-Wire Screens, etc.** (S.S. No. 2115). H. R. Spicer, £12/10/-.

**Fittings, High School.** B. B. Bushby, £265/7/-.

## STATE ELECTRICITY COMMISSION.

**Tumbler Edges, C.I. 16 Sets.** Grimwade Castings Pty. Ltd.

**Fibrolite Piping, 10,000 lins. ft.** James Hardie & Co. Pty. Ltd.

## Bituminous Plastics

(Continued from page 63.)

Positive moulds, which call for accurate weighing of the material, are used with pressures of ca. 1 ton/sq. in. The type of box with undercut ribbing on the outside is now out of date since the bottom tool must contain four separate plates which are taken apart to extract the box. Modern types of box have no undercut other than a circular name plate. This may be

attached to a separate side screw or the whole side containing the name plate may be separate from the other three and ride up on a taper as the box is extracted.

It must be remembered that the material is thermoplastic and it is essential that high pressure be applied while the material is still soft. This means that any stripper plate or blocks used to keep the moulding in the bottom tool during the opening of the press must be rigid enough to withstand the upward surge of soft material without detriment. If the pressure be applied too slowly, weak partitions will result. Temperature control is important, the best method being to heat both tools with steam, and cool under pressure.

## CONCLUSION.

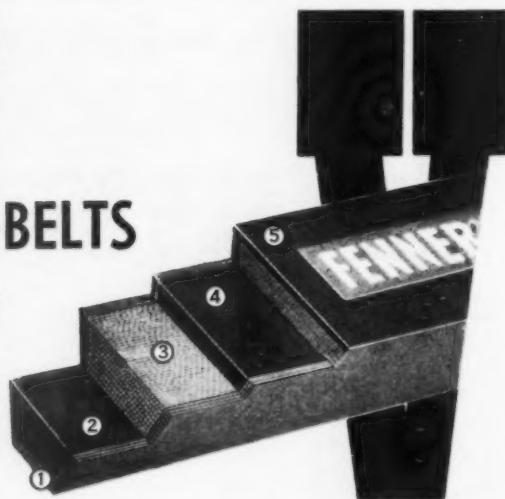
It will be seen that bituminous plastics, although inferior to many other plastics in certain of their properties, continue to play an important part in the industry. Their uses are limited but they are still eminently suitable for certain applications. It will probably be many years before other plastics can compete in these fields on the score of cost.

# Fenner-V-BELTS

MANUFACTURED IN ENGLAND BY  
J. H. FENNER & CO., HULL

## 5 STEPS TO QUALITY

- BIAS CUT STRONG OUTER COVER
- CORD POSITIONING RUBBER
- EGYPTIAN COTTON DRIVING CORDS
- AMPLE BOTTOM RUBBER INCREASES FLEXIBILITY
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**A. E. SUPPLIES Pty. Ltd.** 431 High St., PRAHRAN, S.I. Tel.: Win. 4601.

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**BRITISH GENERAL ELECTRIC Co. Pty. Ltd.** 371-373 Adelaide St., BRISBANE. Tel.: B 3561.  
(Sole Australian Representatives of The General Electric Co. Ltd., of England)

# CURRENT TENDERS

## NEW TENDERS

The following tenders have been called since our last issue. Current tenders which have been published in previous issues follow this section.

### COMMONWEALTH

**DEPARTMENT OF SUPPLY AND DEVELOPMENT.**  
Electric Ranges. July 4.  
Lighthouse Optical Apparatus. July 6.  
Radio and Test Equipment. July 11.  
Refrigerators. July 6.  
**DEPARTMENT OF WORKS AND HOUSING.**  
Cement Bricks (5,000,000). June 27.

### NEW SOUTH WALES

**GOVERNMENT RAILWAYS DEPARTMENT.**  
Ash Conveyors, for Lake Macquarie Power Station (Spec. 1268). Aug. 9.  
Automatic Arc Welding Unit (Sch. CE-8130). July 13.  
Bain Maries, electrically heated (Sch. CE-8113). July 4.  
Bending Machine (Sch. CE-2808). June 29.  
Brick Cutting Machine, complete (Sch. CE-8099). July 19.

Drilling Machine, floor stand, motor driven (Sch. CE-8142). July 19.  
Dust Collectors (8), for Ultimate Power Station (Spec. 1252). Extended to July 19.  
Freon Refrigerating Units (Sch. CE-8114). June 28.  
Iron Clad Self Resetting Reversing Switch (Sch. CE-8098). July 4.  
Metal Band Sawing Machine, Toolmakers (Sch. CE-8093). July 17.

(Turn to page 79.)

# NICHROME RESISTANCE WIRE THE WORLD'S BEST

Made in England **SOLE AUSTRALIAN AGENTS:**  
**WARMAN & DOUGLAS**  
241 FLINDERS LANE, MELBOURNE. Phone: JM 1566.

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**Extruded, Bar, Wire  
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Queensland Agents: Johnston & Gaston Pty. Ltd.  
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## AUTOMATIC BAR WORK

STEEL OR BRASS

Capacity Available  $\frac{1}{2}$  to  $\frac{3}{4}$  inches

**PURVIS-GLOVER ENG. Pty. Ltd.**

41 Moreland St. FOOTSCRAY  
54 Hopkins St. VICTORIA

MW 2284

### NEW TENDERS - Contd.

Roller Steel Shutters, complete (Sch. CE-6307). June 26.  
Shear Blades and Attachments (Sch. CE-6311). June 26.  
Squirrel Cage Induction Motor (2 h.p.), triplet pole magnetic contactor and Iron Clad Push-Button Station (Sch. CE-898). July 5.

#### DEPARTMENT OF MAIN ROADS

Bronze Castings. July 4.  
Tools, for Engineers. July 4.

#### FORESTRY COMMISSION.

A. C. Welder. June 27.  
Auto Reflectors. June 27.  
Callipers. June 27.

### ♦ ♦ SEE ALSO ♦ ♦ "LATE OPEN TENDERS"

Grease Gun. June 27.  
Hydraulic Press. June 27.  
Pulley Blocks. June 27.  
Pillar Drilling Machine. June 27.  
Screw Cutting Lathe. June 27.  
Steel Tool Boxes. June 27.

#### STATE CONTRACTS CONTROL BOARD.

Bedroom Suites. June 27.  
Bridge Chairs. June 27.  
Curtains. June 27.  
Duplicator. June 28.  
High Frequency Induction Heater. June 27.  
Spirit Duplicating Machine. June 28.

#### SYDNEY COUNTY COUNCIL.

Cable (33,000 volt.) and Pilot Cable (Spec. 1423). Extended to July 6.

Coal Handling Plant, for Bunnerong "B" Power Station (Spec. 1430). Extended to June 29.

M.S. Dust Wetting Tanks and Associated Piping, for Pyrmont "B" Power Station (Spec. 1428). July 13.

M.S. Ladders (40), collapsible, galvanised, 16 ft. long. June 30.

Oil Immersed Fuse Switches, 11,000 volt. (Spec. 1421). Sept. 28.

Voltage Cables, high and medium, for Bunnerong Power Station (Spec. 1415). Extended to July 20.

#### MISCELLANEOUS.

Cables of various lengths and sizes, for Shire of Wingecarribee. July 10.

Electricity Meters (47), used, 5 and 10 amp, 240 volt, coin in the slot type, Purchase of, from Menaro County Council. June 28.

Fuels—Motor Spirit; Kerosene; Lubricating Oils and Greases and Street Lighting Lamps, for St. George County Council. July 6.

Plant—Dozers (6), 2-40 h.p., 2-60 h.p., and 2-90 h.p.; and Low Loader Float, for City of Greater Wollongong. July 10.

Road Plant—Crawler type Diesel Tractor, 60/70 h.p., fitted with cable operated angle and tilt dozer; Patrol Grader, 12,000/14,000 lb., with power controls and scarifier, for Shire of Nundie. July 8.

(Turn to page 80.)



## RIDING OUT THE STORM

Transformers are costly equipment—and there are few electrical units that have to take so many hard knocks. Heat or blizzard, rain or electric storm, they continue to function for light and power for all types of electricity undertakings. Resistors—costing little—are not only necessary accessories for effective operation, but they are important contributions to the long and efficient life of the transformer.

The particular process of manufacture to which I.R.C. Resistors are subjected ensures protection from the elements. In all conditions where PERMANENCE is vital, select I.R.C. Resistors, whether Metalised or Power Wire Wound, for which there can be no substitute.

There are I.R.C. Resistors for every electrical industry.

# I.R.C. RESISTORS

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#### WOODWORKING MACHINERY

Six Long Table Saws, Belt Sanders, Positive Foot Mitreing Machines, etc.

**GILBRO ENGINEERING**  
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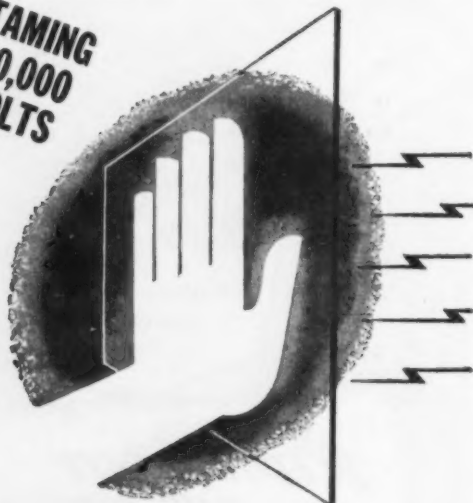
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PTY. LTD.

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"ALKATHENE" brand of Polythene.

TAMING  
10,000  
VOLTS



## WITH "ALKATHENE"

For electrical insulation Alkathene provides exceptionally low power factor, low dielectric constant, high dielectric strength, dielectric stability over wide frequency and temperature bands, high surface and volume resistivity.

**QUALITIES** ★ Chemical resistance. ★ Low temperature resistance.  
★ Toughness.

**EXAMPLES** ★ Cable coverings. ★ Chemical containers.  
★ Refrigeration. ★ Cabinet trays. ★ Moulded toys.  
★ Non-corroding pipes. ★ Food packagings (film).



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Agencies Pty. Ltd.

ALK.1.X9232

### NEW TENDERS - Contd.

#### VICTORIA

##### GOVERNMENT RAILWAYS DEPARTMENT.

Hacksawing Machine. June 28.  
Selenium Rectifiers. June 28.

##### CITY OF MELBOURNE.

Low Tension Junction Boxes  
(Spec. 723/E). July 10.

##### DEPARTMENT OF PUBLIC WORKS.

Briquette Hot Water Service,  
for Moe. June 27.  
Electric Hot Water Service, for  
Warracoot. June 27.  
Fuel Hot Water Service, for  
Learmonth. June 27.  
Fuel Hot Water Service, for  
Waubra. June 27.

Hydraulic Pump to operate  
existing lift, for Melbourne. June  
27.

##### DEPARTMENT OF WORKS AND HOUSING.

C.I.—, Water Pipe and Specials.  
July 4.

Galvanised Water Pipe. July  
4.

##### MELBOURNE AND METRO- POLITAN BOARD OF WORKS.

Steel Plate (2,440 tons). Aug.  
1.

##### MELBOURNE HARBOUR TRUST.

Steam Driven Generating Sets  
(3), 10 K.W. Extended to June  
30.

##### STATE ELECTRICITY COM- MISSION.

Bar Bending and Cropping Ma-  
chine (Spec. 50-51/23). July 12.

### THE PINNACLE OF ACHIEVEMENT IN AUTOMOTIVE VALVE ENGINEERING

D.E.C. BRAND AUTOMOTIVE  
STATIONARY AIRCRAFT

## VALVES

Made in Australia from 12% Silchrome  
with HIGHER CHROME CONTENT

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### DREADNOUGHT VALVE PTY. LTD.

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### BURNT-OUT MOTORS BACK ON THE JOB IN ONE HOUR

Downie replaces your worn-out motor with one completely  
rewound—and has your motor back in production in  
ONE HOUR.

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1/2 H.P. to 12 1/2 H.P. A.G.E. and Crompton-Parkinson motors.  
Downie saves you time and worry—no motor rental—no  
wiring alterations.



### S. & E. DOWNIE "The Electric Motor Firm"

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'Phone: MX 3371.

Telegrams: "DOWNIELEC," Sydney.

Low Voltage Switch-fuse Com-  
binations, totally enclosed (Spec.  
50-51/10). July 19.

O. H. Travelling Crane, electric-  
ally operated (Spec. 50-51/18).  
July 19.

Universal Milling Machine  
(Spec. 50-51/22). July 12.

Steel Pipes, for the Trunk Mains;  
Valves for Trunk Mains; Cast  
Iron Pipe Specials for Main from  
Lindisfarne to Bellerive; Cast  
Iron or Asbestos Cement Pipes  
for Lindisfarne, Montague Bay,  
and Bellerive Reticulation; Valves  
for Reticulation Mains at Lindis-  
farne, Bellerive, and Montague  
Bay; Cast Iron Pipe Specials for  
Lindisfarne, Montague Bay, and  
Bellerive Reticulation, for Munici-  
pality of Clarence. Aug. 21.

#### WEST AUSTRALIA

##### GOVERNMENT TENDER BOARD.

Aluminium Brass Condenser  
Tubes, for S.E.C. June 29.  
Centrifugal Pumps. Extended  
to June 29.

Circular Saw Bench. June 29.

Fork Lift Trucks. June 29.

Fuel Oil, for Country Power  
Station. June 29.

Galvanised Water Piping, sizes  
from 1/2 inch to 3 inches. June  
29.

Jib Cranes, Fork Lift Trucks  
and Shunting Tractors. June 29.

Mild Steel Plate (120 sheets).  
June 29.

Pumping Plant. June 29.

Sand Mixing Equipment. June  
29.

Steam Travelling Cranes. Ex-  
tended to July 6.

Steel Lockers. July 6.

Washing Machine, for Wooroo-  
loo. July 6.

#### TASMANIA

##### MISCELLANEOUS.

Miscellaneous Piping, Cast  
Iron, Asbestos Cement, or Mild

### CURRENT TENDERS

The following tenders have  
appeared in previous issues  
and are still current.

#### COMMONWEALTH

##### POSTMASTER-GENERAL'S DEPARTMENT.

Arm Braces and Combiners  
(Sch. C.6330). June 29.  
Barretters (Sch. C.6293). July  
11.

Cable and Carrier Cable Sys-  
tems (Sch. C.6304). July 4.

Canvas and Duck, for Mail  
Bags (Sch. V.6326). Aug. 10.

Carrier Telegraph Equipment  
(Sch. C.6288). July 20.

Carrier Telephone Equipment  
(Sch. C.6343). July 13.

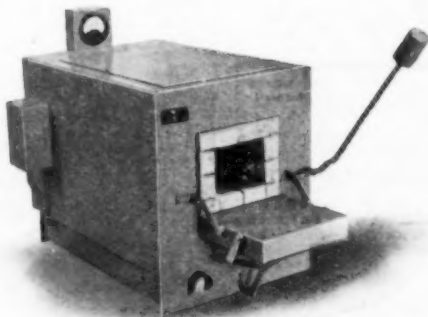
Communication System between  
Sydney and Melbourne (Spec. C-  
8157). Extended to Jan. 18, 1951.

Condensers (Sch. C.6292). July  
20.

(Turn to page 81.)



At last - the answer to ALL your  
High Temperature problems!  
**MARTIN BOX-TYPE  
RESISTOR FURNACES**



Typical Resistor Furnace with 1200° C. Temperature Range.  
Note robust and convenient door construction.

MARTIN now offers a wide range of Electric Resistor FURNACES with all these STAR FEATURES —

- ☆ **RAPIDITY** of heating
- ☆ **ECONOMY** of performance
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- ☆ **PLEASING** appearance
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- ☆ **LOW INITIAL COST**

For Toolroom, Heat Treatment Shops, Laboratories, and many production processes — the choice is a "Martin" Resistor Furnace.

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TASMANIA: The Reliance Trading Co., 105 Macquarie St., Hobart. WEST AUST.: Davies & Ferguson, 51 St. George's Terrace, Perth. VICTORIA: British General Electric Pty. Ltd., 338 Bourke St., Melbourne. QUEENSLAND: C. F. Willers, 36 Eagle St., Brisbane. SOUTH AUSTRALIA: Mr. J. H. Law, 12 Fullarton Rd., Netherby, N.Z.: W. E. Lewisham Ltd., Gene Buildings, Anzac Ave., Auckland.

**THE AUSTRALASIAN MANUFACTURER**  
[June 24, 1950, Page 81.]

**CURRENT TENDERS — Contd.**

- File Covers (Sch. C.6333). July 6.
- Lamps, Caps and Sockets (Sch. C.6324). Aug. 15.
- Lead Sealers and Parts (Sch. C.6170). Aug. 3.
- Loading Coils in Cases (Sch. C.6279). July 13.
- Magnetic Type Recorders (Sch. C.6303). July 27.
- Mechanically Operated Spring-sets (Sch. C.6323). Aug. 1.
- Microphone, Stands, and Cable (Sch. C.6316). Aug. 1.
- Morkrum Printer Parts (Sch. C.6285). July 20.
- Pipe Hooks and Clips (Sch. C.6319). July 6.
- Pole Caps (Sch. C.6335). Aug. 31.
- Portable Tone Test Sets (Sch. C.6287). June 27.
- Post Office Scales and Weights (Sch. C.6284). July 18.
- Printed Forms, Money Order, "M.O." Series (Sch. C.6340). June 29.
- Ringling Equipment (Sch. C.6311). Aug. 1.
- Routine Testing Equipment (Sch. C.6281). July 25.
- Semi Automatic Trunk Exchange Equipment (Sch. C.6025). Sept. 28.
- Sleeves, Waxed Paper (Sch. C.6337). July 6.
- Sleeves, Paper Jointing (Sch. C.6331). June 29.
- Testing Instruments (Insulating Resistances), (Sch. C.6289). July 13.
- Tools, Leadworking, Measuring and Miscellaneous (Sch. C.6246). July 20.
- Underground Cable, large sizes (Sch. C.6334). July 6.
- Wire Carrier Telephone Equipment, 12 Channel Open (Sch. C.6305). July 27.

**DEPARTMENT OF SUPPLY  
AND DEVELOPMENT.**

- Bedside Mats. June 27.
- Cotton Canvas, Flax Canvas and Cotton Duck. June 29.
- Lightweight Flying Suits. June 27.
- Radiosonde Transmitters. July 18.
- Steel Die Blocks, Purchase of. July 18.

**DEPARTMENT OF WORKS  
AND HOUSING.**

- C.I. Spigot and Socket Soil Pipes and Fittings (3, 4, and 6 in.). June 27.

**STATES**

**NEW SOUTH WALES**

**GOVERNMENT RAILWAYS  
DEPARTMENT.**

- Carrier Telephone System, for Chullora Workshops (Spec. 84). Extended to July 5.
- Coal Handling Equipment, for Lake Macquarie Power Station (Spec. 1263). July 5.

(Turn to page 82.)



**HOUSEHOLD AND INDUSTRIAL  
ADHESIVE**

Supplied in 6-oz. tubes, pint, quart, gallon and 4-gallon tins

**REPAIRS  
EVERYTHING**

**INTERSTATE AGENTS:**

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## COMPARE THE LABOUR in descaling of condenser tubes . . .

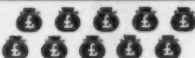


**MANUAL DESCALING** using wire brushes took 24 man hours under test conditions.

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## COMPARE THE COST of a specific descaling job . . .



It is impossible, manually, to do an effective job of cleaning badly scaled boiler tubes without drawing the tubes. Cost, £100.



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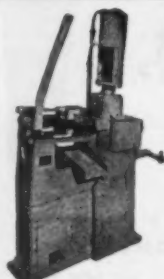
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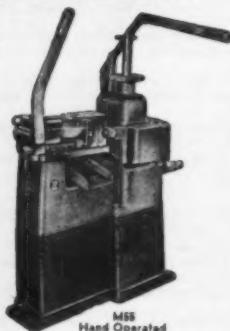
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6 to 7 oz.  
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Zinc Base  
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## CURRENT TENDERS—Contd.

Excavators, crawler mounted, diesel powered (Sch. CE-2756). June 27.

Indoor Type Oil Circuit Breakers, 6,600 volt, 75 M.V.A. for Awaba State Coal Mine Sub-station (Spec. 1266). Aug. 30.

Indoor Type Oil Circuit Breakers, 415 volt, for Awaba State Coal Mine Sub-station (Spec. 1287). Aug. 30.

Rectifier Units (4,000 KW) and Energy Dissipating Resistor Units (Spec. 1258). Extended to Sept. 6.

Refrigeration Units (Sch. CE-8114). June 28.

Self Lowering Jacks, 50 ton capacity (Sch. CE-3444). July 6.

Transformers (4), 2,000 KVA, 33,000/2,200 volt. (Spec. 1265). June 28.

## DEPARTMENT OF MAIN ROADS.

Berriman Loader. June 27.

Concrete Pipes. June 27.

Crimped Wire Mesh Panels. June 29.

Drilling Machine. June 27.

Gas Range. June 27.

Metallic Tubing. June 27.

Metalwork and Machinery. Oct. 5.

Radial Screwing Machine. June 27.

Screening Machinery, for Granville. July 11.

Sanding Machine. June 27.

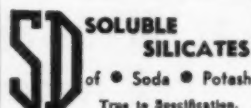
Structural Steelwork, for Granville. Extended to July 11.

Wheel Rims. June 27.

## DEPARTMENT OF WORKS AND HOUSING.

Cooking Ranges, for George's Height. June 27.

Electric Water Supply Systems (2), continuous heated, for Garden Island. July 4.



Silicate & Dolomite Co. of Aust.  
Pty. Ltd.  
ALLEN STREET  
PYRMONT, N.S.W.

## METROPOLITAN WATER, SEWERAGE AND DRAINAGE BOARD

Centrifugal Type Pumping Unit, electrically driven, for Brimstone Gully Coal Mine. June 27.

Concrete Mixing and Batching Plants (2 or 3), approx. capacity 20 cu. yds. per hour. June 27.

Electrically driven Centrifugal Type Pumping Units (2), for Carlingbah. June 27.

Galvanised M.S. Continuous Weld Tubing (90 miles) of various sizes and approx. 95,000 galv. M.S. Tubulars. July 18.

M.S. Semi-Trailer Transporter Units (22), for Bulk Cement. Extended to June 27.

M.S. Electrically Welded Cement Lined and Coated Fittings. July 11.

Vertical Spindle Centrifugal Type Pumping Units (3), electrically driven, for Upper Cordaux. July 25.

## STATE CONTRACTS CONTROL BOARD.

High Frequency 4K.W. Induction Heater. June 27.

## SYDNEY COUNTY COUNCIL.

Air Break Isolating Switches, for Support Insulators (Spec. 1386). Extended to July 6.

Circulating Water Screens, self-cleaning, for Pyrmont "B" Power Station (Spec. 1426). July 27.

D.C. Switchboard, 340 volt for Pyrmont "B" Power Station (Spec. 1424). June 28.

Metal Clad Neutral Switching Equipments, 6600 volt, for sub-stations (Spec. 1418). August 10.

Metal Clad Switchgear (11,000 volt, 250 MVA), for City Sub-station (Spec. 1382). August 17.

Metal Clad Switchgear (38,000 volt), for Homebush Sub-station (Spec. 1403). Aug. 17.

Motor Driven Vacuum Cleaning Plant and Piping, fixed type, for Bunnerong "B" Power Station (Spec. 1402). Aug. 10.

Outdoor Combined Switches and Fuses, 11,000 volt, high rupturing capacity (Spec. 1420). Aug. 31.

Power Transformers (45 MVA), for Homebush Sub-station (Spec. 1419). Aug. 31.

Precision Lathe, 8 inch swing, and Accessories (Spec. 1425). Sept. 7.

Substation Relay Group Equipment, for City A.C. Network Signal Equipment (Spec. 1408). Aug. 17.

Vacuum Cleaning Plant, fixed type, motor driven, for Pyrmont "B" Power Station (Spec. 1429). Aug. 10.

(Turn to page 83.)

## NEW TENDERS - Contd.

Vacuum Cleaning Plant, motor driven, fixed type, for Fyrmont "B" Power Station (Spec. 1402). Aug. 10.

### WATER CONSERVATION AND IRRIGATION COMMISSION.

Portable Concrete Mixer (2), engine driven, approx. 10 c.f. capacity. July 6.

Steam Slush Pump, Purchase of. June 23.

### MISCELLANEOUS

Bull Terrier Speed Patrol; Manual Control, 8 ft. blade, weight approx. 3,500 lb., pneumatic tyres, Purchase of, from Municipality of Penrith. June 27.

Boiler Feed Pumps, for Clarence River County Council. July 25.

Centrifugal Sludge Pump, Electrically Operated, for Shire of Shoalhaven. June 26.

Diesel Electricity Generating Set (75 KVA), comprising Diesel Engine and Alternator and Exciter, and Switchboards with meters, Purchase of, from Municipality of Bourke. June 30.

F.M. Radio Communication Service of one Central Station and five (5) Mobile Stations, for Sutherland Shire Council. July 5.

Gang Mower Combination, comprising Tractor and Gang Mowers, 7 ft. cut, Purchase of, from Municipality of Randwick. July 4.

Generating Sets:—4-Cylinder VXA Diesel Engine, 76 H.P., 428 R.P.M. Direct coupled to Alternator. Alternating current generating 50 K.V.A. Complete with Switchboard, with all necessary equipment; 3-Cylinder VXA Diesel Engine and Alternator, 57 H.P., 428 R.P.M. Direct coupled to Alternator. Alternating current generating 31.3 K.V.A. Complete with Switchboard with all necessary equipment, Purchase of, from Municipality of Peak Hill. June 27.

Plant:—Tractor, fitted with equipment for loading and dosing, powered with a Diesel motor of 26-36 h.p.; Heavy-duty road grader, approx. 22,000 lb., powered with a Diesel engine, 60-100 h.p., for Shire of Wollondilly. July 17.

Standard Corrugated Asbestos Roof, for Newcastle City Council. June 21.

Switchgear, truck type (11,000 v.), for Shire of Blacktown. July 4.

Truck Type Switchgear (11,000 v.), for Shire of Blacktown. July 4.

## VICTORIA

### GOVERNMENT RAILWAYS DEPARTMENT.

Brattice Cloth. June 28.

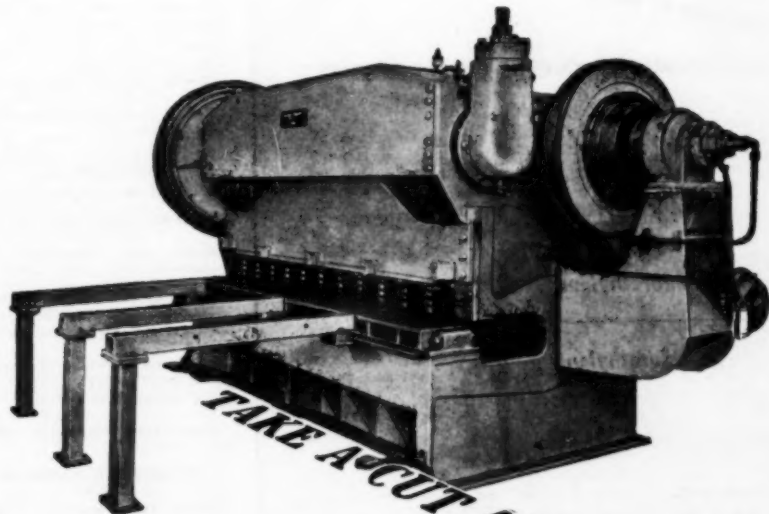
Control Equipment. August 9.

Sectional Water Tanks and Towers. July 26.

Supervisory Control Equipment, Control Desk Key Panels and Diagram Panels. Aug. 9.

Switchgear, 2,200 volt. July 26.

(Turn to page 84.)



**TAKE A CUT AT COSTS...  
WITH AN ALL-STEEL GUILLOTINE SHEAR**

Take a cut at your guillotining costs with a Welded Products' machine. Its blades will still be taking rapid, clean cuts long after several from a conventional cast frame machine are written off as scrap.

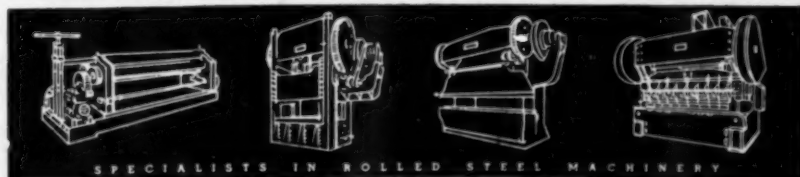
All in all, rolled steel construction means greater rigidity; greater rigidity means less deflection; less deflection means longer retained edges on blades, fewer regrinds, fewer replacements. It'll pay you, in greater output, less time off for blade regrinding and renewals, lower maintenance and lower operating costs, to replace existing equipment with high production Welded Products' guillotines.

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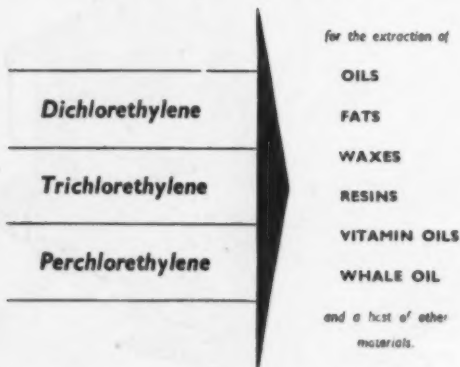
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**Features:** Rigid back pressure beam, which supersedes the conventional fish-back cutting beam. Self-contained hydraulic hold-down system. Pneumatically controlled multiple disc friction clutch and interlocked automatic brakes. Screw-operated self-freeing back gauge. Patent plate splitting device enabling plate to any length to be split in widths up to the maximum depth of the gap.



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FOR WOOD METAL PAINT PLASTICS GLASS ENAMEL LEATHER

## CURRENT TENDERS—Contd.

### CITY OF MELBOURNE.

Fabricated Steelwork for Galleries and Ladders (Spec. 719/E). Extended to July 3.

Low Tension Junction Boxes (Spec. 723/E). July 10.

Radial Drilling Machine (Spec. 722/E). July 3.

Radial Drilling Machine (Spec. 722/E). July 3.

### COMMONWEALTH RAILWAYS DEPARTMENT.

Fishbolts and Nuts. July 4.

### DEPARTMENT OF CIVIL AVIATION.

Radio and Electrical Test Equipment (Sch. 294). June 27.

### DEPARTMENT OF WORKS AND HOUSING.

C.I. Water Pipes and Specials. July 4.

Chip and Sawdust Extraction Plant, for Bendigo. June 27.

Galvanised Water Pipes. July 4.

New Steam Roller, for Laverton. June 27.

### MELBOURNE HARBOUR TRUST.

Bronze Valves and Cocks (Spec. 49-50/338). June 28.

C.I. Fullway and Reflux Valves (Spec. 49-50/339). June 28.

Chains, for Dredging Plant. July 11.

Control Instruments for Cooling Towers (Spec. 50-51/7). July 5.

### POSTMASTER-GENERAL'S DEPARTMENT.

Agricultural Drain Pipes (Sch. V.350). July 11.

Bin Store Units (Sch. V.362). July 11.

Conduit and Conduit Fittings (Sch. V.354). June 27.

Motor-cycle Parts (Sch. V.358). July 4.

Portable Lavatories (Sch. V.360). June 27.

Power Board Fittings (Sch. V.361). July 4.

Rectifiers (Sch. V.364). July 4.

Relays, 5,000 Type Equipment (Sch. V.367). June 27.

### STATE ELECTRICITY COMMISSION.

Automatic Telephone Apparatus (Spec. 50-51/13). Aug. 2.

Belt Conveyor System (Spec. 50-51/4). Aug. 2.

Control Cable, V.R., or P.C.I. (Spec. 50-51/1). Aug. 16.

Fusion Welded M.S. Air Receivers (Spec. 50-51/8). July 5.

Indoor Wall Mounting Current Transformers (Spec. 50-51/12). July 19.

Induced Draft Fans, Steel Flues, Dust Eliminators and Structural Steel Housing (Spec. 50-51/5). Aug. 16.

M.S. Water Storage Tanks, with Accessory Equipment (Spec. 50-51/11). July 5.

Motor Operated Fullway Valves (Spec. 49-50/335). June 28.

(Turn to page 85.)

## ELEVATORS and CONVEYORS



GRAIN ELEVATOR BOOT  
Capacity: 300 tons per hour

**ROBERT BODINGTON Pty. Ltd.**  
Engineers

Queensberry and Leicester Streets,  
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Established 1854

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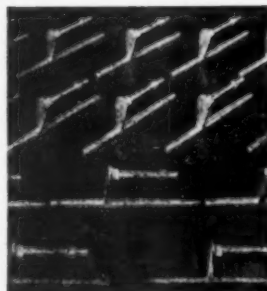
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Capacity is available for the production of non-ferrous castings, in production quantities in ALUMINIUM ALLOYS, sand or permanent mould chill cast, either fully heat-treated and aged or with precipitation treatment, also in BRASS BRONZE and GUNMETAL ALLOYS, sand cast, both single and multiple spray castings, as required by Engineering and Industrial users. For further details phone our Technical Service Engineer, MX2411.

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BAPTIST ST. REDFERN, SYDNEY  
BRANCHES IN ALL STATES

### CURRENT TENDERS—Contd.

Outdoor Switchgear and Accessories, 66,000 and 22,000 volt. (Spec. 50-51/6). Aug. 18.

Switchgear (230,000 volt.) and Accessories (Spec. 49-50/251). Extended to July 26.

Telephone Cable (Spec. 49-50/291). July 12.

### STATE RIVERS AND WATER SUPPLY COMMISSION.

Electric Pumping Units (4), motor-driven, for Red Cliffs. June 30.

### STORES SUPPLY AND TENDER BOARD.

Paper, for Department of Interior (Sch. C.T.B. 883). June 29.

### MISCELLANEOUS.

Garbage Handling Plant, for City of Fitzroy. June 26.

Oil Circuit Breakers, for City of Footscray. Extended to July 17.

Pick Up Street Sweeping Machine, for City of Adelaide. July 28.

Road Traffic Control Signal Equipment, for City of Kew. July 11.

Traffic Control Lights, for Borough of Ringwood. July 6.

Transformers:—Three (3) only 100 K.V.A., 6,000/415/240 volt., 3-phase, 50 cycle Outdoor Type Transformers, with standard tapplings and design, and controlled by an externally-operated off-lead

tap-changing switch; one (1) only 100 K.V.A., 22,000/415/240 volt., 3-phase, 5 cycle Outdoor Type Transformer, with standard tapplings and design, and controlled by an externally-operated off-lead tap-changing switch, for City of Ararat. July 3.

Water Filtration and Purification Plant:—Flocculating and Sludge Scraping Mechanisms; Filter Control Valves; Rate Controllers, Indicators, and Connecting Pipework; C.I. Pipes and Fittings, for Treatment Plant Units; Chemical Dry Feeders, etc.; Solution Mixing Equipment, Chlorinator Equipment, etc., for Mildura Urban Water Trust. July 10.

### QUEENSLAND

### GOVERNMENT RAILWAYS DEPARTMENT.

Diesel Electric Locomotives (10). June 30.

Locomotives, Diesel, electric. July 11.

Machine Tools. July 13.

Rolled Steel Tyres, 4,000. July 20.

Steel Rails and Fastenings. June 28.

BRISBANE CITY COUNCIL  
Distribution Transformers, 500 KVA and 1,000 KVA. July 28.

### STATE ELECTRICITY COM- MISSION.

Alternator, 6.6 KV, 125 KW (Spec. 194). July 19.

Mechanical Moulded and Extruded

# RUBBER PRODUCTS

To Your Own Specifications

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### INTERSTATE REPRESENTATIVES:

VIC.: A. V. Watt & Sons, 14-16 St. Francis Street, Melbourne.  
S.A.: Neville Collins Limited, 154 North Terrace, Adelaide.

CONTRACTORS TO STATE GOVERNMENT DEPARTMENTS

C.I. Pipes and Specials (Spec. 211). July 12.

Concrete Pipes, reinforced (Spec. 225). July 10.

Control Equipment, for Circulating Water System (Spec. 215). July 19.

Gas or Gas-cum Oil Engine (100-150 h.p.). June 26.

Generating Plant, gas-cum-oil driven (Spec. 219). July 5.

Power House Switchboards (Spec. 195). Aug. 9.

Steam Piping and Valves (Spec. 229). July 12.

Steam Turbo Alternators (Spec. 200). Aug. 30.

Steam Turbo Alternator (Spec. 196). Aug. 16.

Water Tube Boilers (Spec. 200). Aug. 30.

### MISCELLANEOUS.

Low Voltage Sub-station Equipment, for Townsville Regional Electricity Board. July 17.

Switchgear (11,000 volt.), for Townsville Regional Electricity Board. Aug. 1.

### SOUTH AUSTRALIA

### SUPPLY AND TENDER BOARD.

Aluminium or Aluminium Alloy Conduit and Fittings. July 3.

### WEST AUSTRALIA

### GOVERNMENT TENDER BOARD.

Diesel Mechanical Locomotives (18). July 20.

Diesel Electric Main Line Locomotives (48). July 27.

M.S. Rolled Sections. July 6.

Steam Travelling Cranes. Extended to July 8.

Steel Rivets, for Railways. July 20.

### TASMANIA

### HYDRO-ELECTRIC COM- MISSION.

Automatic Self Closing Valves (5), 90 inch diameter. Aug. 1.

### Accepted Tenders

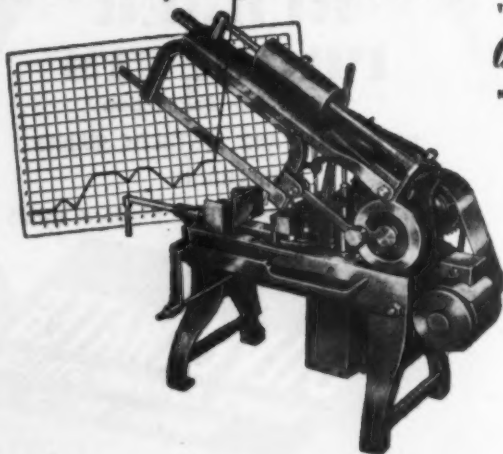
### COMMONWEALTH

### DEPARTMENT OF CIVIL AVIATION.

Semi-Automatic Morse Keys (Sch. No. 268). R. H. Cunningham Pty. Ltd. 1342/10.

(Turn to page 86.)

## Production Booster



THE NEW IMPROVED

**Grancowski**  
HIGH SPEED

MOTORISED HACK-SAW

Now is the time to make your change-over and save on man hours and maintenance costs, with a greater output machine of new design and proven efficiency.

### SPECIFICATIONS :

Capacity at 90 degrees: 6 inch round and square, 7½ inch flats  
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Motor : ½ H.P. 1,440 R.P.M. 3 phase 50 cycle  
Length of Blade : 12 inches to 16 inches

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Lubricators throughout. Removable Suds Tank. Prismatic way with adjustable take-ups in the main frame, as well as the saw are hand fitted. Motors of any required voltage fitted. Patent vices lock automatically at 90 degrees and 45 degrees. All machines are tested before leaving the factory and are supplied with a test cut.

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89-101 LOTHIAN STREET, NORTH MELBOURNE.

### Accepted Tenders—Continued

General Hardware Items, for Radio Aerial Construction (Sch. No. 219). Stewarts & Lloyds (Aust.) Pty. Ltd., £781/7/8; £263/8/11; F. L. Kirkby & Co. Pty. Limited, £7,635/0/8; British General Electric Co. Pty. Ltd., £147/16/2; Harris, Scarfe Limited, £194/1/-; Shell Co. of Aust. Limited, £27/11/-; McPhersons Paints Pty. Limited, £11/5/-; Briscoe & Co. Limited, £393/1/8; Rex Robinson & Son, £86; Taubmans Pty. Limited, £161/5/-; British Aust. Lead Mfg. Pty. Limited, £325; A. Simpson & Son Limited, £1,469/17/-; Wringers Pty. Ltd.,

£73/7/3; J. Todd & Son Limited, £1,187/10/-; Paul and Gray Pty. Limited, £999/3/4; Selley's Chemical Mfg. Co. Pty. Ltd., £24/7/6; Austral Bronze Co. Pty. Ltd., £177/17/3; Chemical and Super-coating Co., £131/5/-.

### DEPARTMENT OF WORKS AND HOUSING.

Automatic Refrigeration Plant at Dunreath Migrants' Hostel. Atkins (W.A.) Ltd., £262/13/-.

Pumps and Electric Motors, Part 3, at Carnarvon Whaling Station. Atkins (W.A.) Ltd., £405/17/6.

School Furniture to Detail at Alice Springs and Darwin. Carr & Baird, £600.

### DEPARTMENT OF SUPPLY AND DEVELOPMENT.

Sweeping Brooms (Req. No. C-4/157/20). Australian Broom Co. Pty. Ltd., £388/12/2; Thos. Mitchell & Co. Pty. Ltd., £2,066/6/8.

Aluminium Alloy Castings (Req. No. C-4/371/250). Commonwealth Aircraft Corporation, £1,275/11/6.

Comsteel Sheets (Req. No. C-4/371/308). Commonwealth Steel Co. Ltd., £499/15/10.

Battle Dress Trousers (Req. No. C-4/252/4). Carter, Smith & Co., £6,383/8/8.

Bulldozer Spare Parts (Req. No. C-4/308/14). Industrial Sales & Service Pty. Ltd., £333/17/2.

Petrol Engine Spares (Req. No. C-4/310/16). Ronaldson Bros. & Tippet Ltd., £446/6/8.

Battle Dress Trousers (Req. No. C-4/252/4). C. Brooks & Co., £1,707/6/11.

Battle Dress Blouses (Req. No. C-4/252/5). C. Brooks & Co., £3,090.

Wood Slats (Req. No. C-4/150/43). Johnston's Pty. Ltd., £375.

Cornflour (Req. No. C-4/106/486). Renown & Pearlite Pty. Ltd., £683/6/8.

Gellignite (Req. No. C-4/152/18). Dalgety & Co. Ltd., £1,022/3/6; Elder Smith & Co. Ltd., £389/8/-; Dalgety & Co. Ltd., £1,399/16/-; Elder Smith & Co. Ltd., £325/14/3.

(Turn to page 87.)

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## Accepted Tenders—Continued

Millet Broom, with Cane Centre (Req. No. C.4/157/31). Australian Broom Co. Pty. Ltd., £339/8/5.  
Scrubbing Brushes (Req. No. C.4/157/31). Thos. Mitchell & Co. Pty. Ltd., £332/10/-.

Folding Canvas Chairs, with Wooden Arms, Canvas Seat and Backrest (Req. No. C.4/168/78). Foldaway Furniture Pty. Ltd., £877/10/-.

Steel Squares (Req. No. C.4/171/59). McPherson's Ltd., £460/1/11.

Steel Stamps (Req. No. C.4/171/59). J. H. Hardie & Co., £406/11/6.

Gymnastic, Crepe Soles, Shoes (Req. No. C.4/204/29). North Australian Rubber Mills, £173/13/9.

Khaki Drill Trousers (Req. No. C.4/251/24). Loomlock Lingerie Pty. Ltd., £1519/19/10.

Blue Twilljackets (Req. No. C.4/252/16). Esquire Pty. Ltd., £23,801/8/2.

Bleaches, Single Sheets (Req. No. C.4/266/197). Griffiths Bros. Ltd., £4,092/11/3.

Table Balze (Req. No. C.4/266/215). Evan Evans Pty. Ltd., £353/8/9.

Battery Electric Operated Fork Lift Trucks (Req. No. C.4/311/11). Lawton Industrial Trucks Ltd., £32,010/15/4.

Milling Machine (Req. No. C.4/313/173). Demco Machinery Co. Pty. Ltd., £1,150.

Flexible Whip (Req. No. C.4/316/101). Standard Telephones & Cables Pty. Ltd., £1,142/2/-.

Multirhead-Wigand Decade Oscillator (Req. No. C.4/319/17). Watson, Victor Ltd., £376/19/10.

Ethylene Glycol of German Origin (Req. No. C.4/161/47). Harrison, Ramsay Pty. Ltd., £393/10/-.

Lissapol (Req. No. C.4/180/52). Imperial Chemical Industries of Australia and New Zealand Ltd., £266.

Soap (Req. No. C.4/183/25). Dominant Chemical Co., £750; G. W. Pennell, £700.

Gymnasium Shoes, with Black Soles and Black Toecaps (Req. No. C.4/204/30). North Australian Rubber Mills, £414/7/8.

Alrmen's Mattresses (Req. No. C.4/250/67). Keywell Badding, £10,105/14/-.

Battle Dress Trousers (Req. No. C.4/252/4). Eaglehawk Clothing Co., £65,500.

G.S. Grey Blankets (Req. No. C.4/259/34). Torrensides Woollen Mills, £4,357/0/7.

Silver Grey Blankets (Req. No. C.4/259/34). Torrensides Woollen Mills, £4,357/0/7.

G.S. Grey Blankets (Req. No. C.4/259/34). Tweedside Manufacturing Co. Ltd., £17,184/7/6.

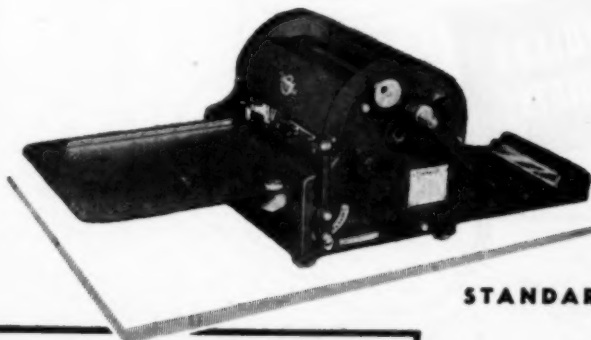
Towels (Req. No. C.4/266/198). Dri - Glo Towels Pty. Ltd., £1,072/1/10.

Mill Housings (Req. No. C.4/313/185). Gordon Marr & Sons Pty. Ltd., £848/8/5.

Goniometer (Req. No. C.4/316/122). Electronic Industries Imports Pty. Ltd., £242/7/6.

Clamps (Req. No. C.4/350/40). Crusader Plate Co. Pty. Ltd., £1,300.

(Turn to page 88.)



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PVCLX 9496

### Accepted Tenders — Continued

American Walnut Laminex (Req. No. C4/158/41). John Danks & Sons Pty. Ltd. £320.  
Table Forks (Req. No. C4/175/98). K. G. Luke Pty. Ltd. £2362/1/7.  
Cups and Saucers (Req. No. C4/175/146). Cafe & Hotel Supplies (Vic.) Pty. Ltd. £836.  
D.D.T. Emulsion (Req. No. C4/180/55). Tredmar Chemical Products, £449/5/3.  
Pillowslips (Req. No. C4/266/197). Lebel Trading Co. (Aust.) Ltd. £680/16/8.  
X-ray Units (Req. No. C4/316/131). Australian General Electric Pty. Ltd., £1,633/11/5.  
Night Latches (Req. No. C4/366/102). Briscoe & Co. Ltd., £290/5/3.  
Gunmetal Castings (Req. No. C4/371/271). Norman A. Matthews & Son, £715/6/8.

Rubber Aircraft Parts (Req. No. E.14,914). Dunlop Rubber (Australia) Ltd., £439/2/2.  
Baking Dishes (Req. No. 684). F. G. Kerr & Co. Ltd., £292/10/-.  
Colosyl Degreasing Agent WX (Req. No. 689). Abel, Lemon & Co. Ltd., £261/6/8.  
High Pressure Joining, "Super-ite" Asbestos Webbing, Packing Joint, 1-in. Laminated Cork (Req. No. 693). J. Blackwood & Sons Pty. Ltd., £640/9/1.  
Hair Felt, 1-in. thick, 72-in. wide (Req. No. 693). Felt & Textiles of Aust. Ltd., £287/6/3.  
Portable Heaters (Req. No. 696). W. Kopsen & Co. Pty. Ltd., £256/10/-.  
Galvanized Flexible Steel Wire Rope (Req. No. 698). The Aust. Wire Rope Works Pty. Ltd., £462/11/-.  
Complete Drinker Respirator (Req. No. 699). Scott, Henderson Pty. Ltd., £808.



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Clear Mica (Req. No. 701). Commonwealth Mica Pool. £468/1/-.  
White Metal, Special Tooling and Lids (Req. No. 704). Davison Engineering Co. Pty. Ltd., £2,497/15/4.

### VICTORIA

#### GOVERNMENT RAILWAYS DEPARTMENT.

Brooms, Brushes, etc. (Sch. 187). A. W. Garwood, S. A. Brush Co. Ltd., Excelsior Broom & Brush Co. Pty. Ltd., S. A. Benwell, John Zevenboom & Co. Pty. Ltd., Stanford & Pilley Pty. Ltd., W. H. Cowley, Downs & Son Pty. Ltd. Rates.  
Plumbers' Goods (Sch. 189). H. A. Barnard Pty. Ltd., John Danks & Son Pty. Ltd., McPherson's Ltd. Rates.  
Galvanised Steel Bolts and Nuts and Brass Nuts (Sch. 205). H. A. Barnard Pty. Ltd., McPherson's Ltd. Rates.  
Chamois Skins and Sponges (Sch. 216). W. & G. Dean Pty. Ltd., James Harvie, C. J. Langford. Rates.  
Clearing and Earthworks, for Provision of Siding to S.E.C. Briquetting Works, Morwell (Con. 58,006). Melbourne Tractor Co., £14,508/1/8.

Second-hand Turbo-Alternator, Condensers, Transformers, etc. Purchase of (Ten. 1378). Belfast Machinery & Metal Co. Rates.

"GY" Class Trucks (Con. 58,222). Knox, Schlapp Pty. Ltd., K. L. Distributors Pty. Ltd., A. E. Goodwin Ltd., Commonwealth Engrg. Co. Ltd. Rates.

Transformers, for Low Voltage Lighting (T.7632). H. Rowe & Co. Pty. Ltd., £6/1/10.

Oil Paint (T.7632). Taubmans Pty. Ltd., Item 1, 32/- per gal.; Item 2, 30/- per gal.; Item 3, 30/- per gal.; Item 4, 29/- per gal.; Item 5, 29/- per gal.; Item 6, 24/- per gal.; Item 7, 24/- per gal.; Item 8, 24/- pr gal.; Item 9, 24/- per gal.; Item 10, 24/- per gal.

Zinc Chromatic Primer (T. 7632). British Aust. Lead Mfr., Item 11, 36/1 per gal.; Item 12, 42/8 per gal.

Water Oil Bound Paint, pale ivory (T.7633). Taubmans Pty. Ltd., Item 1, 8/-; Item 2, 8/-; Item 3, 4/3; Item 4, 8/-; Item 5, 4/3; Item 6, 8/-; Item 7, 4/3.

### LARGE BAUXITE DEPOSIT.

It is reported that British engineers have found a deposit of bauxite which they believe to be the largest in the world.



They found the deposit while surveying the River Volta on the west coast of Africa.

The deposit is estimated at more than 200,000 tons of good quality ore.

## MARFORM PROCESS OF METAL FORMING.

A new, efficient and economic process of precision metal forming known as the "Marform Process" has been developed by The Glenn L. Martin Co., U.S.A.

By arrangement with Glenn Martin, The Loewy Engineering Co., Ltd., Manfield House, 376 Strand, London, W.C.2, will undertake the introduction of the Marform Process in the United Kingdom, Australia and the rest of the British Commonwealth, Europe and other export territories. Complete presses as well as equipment for incorporation into existing presses to carry out the Marform Process, will be supplied by Loewy Engineering, who intend to build the equipment in their works at Light Machines Ltd., Yeovil. Technical information and assistance is available for potential and actual users of the process. Further details are available from Horrocks Roxburgh Pty. Ltd., 517 Little Collins Street, Melbourne.

## Late Open Tenders

### NEW SOUTH WALES

#### DEPARTMENT OF MAIN ROADS.

Concrete Pipes, July 4.  
Diving Dress, July 4.  
Valve Seat Grinding Kit, July 4.

#### GOVERNMENT RAILWAYS DEPARTMENT.

Lightning Arresters, distribution type (Quote CE-8181), July 26.

Road Weighbridge, 35 ton, for Conoble, July 26.

Superheater Tubes, for Boiler, complete set (Quote CE-2806), July 5.

Typewriters, foolscap size (Quote CE-6314), June 26.

#### SYDNEY COUNTY COUNCIL.

Ironclad Service Cut-outs (700), 50-100 amp, June 28.

M.E.D. Lamp Choke Boxes 110), June 30.

#### MISCELLANEOUS.

Crawler type Tractor (60-65 H.P.), fitted with 10 ft. Angle Dozer Blade, for Shire of Severn. Undated.

### VICTORIA

#### GOVERNMENT RAILWAYS DEPARTMENT.

Pneumatic Concrete Vibrators, Aug. 9.

Portable Concrete Mixers, Aug. 9.

Switches and Bus-Bar Supporting Insulators, Aug. 2.

#### DEPARTMENT OF WORKS AND HOUSING.

Stainless Steel Tanks, for Parkville, June 27.

#### STATE RIVERS AND WATER SUPPLY COMMISSION.

Lubricating Oils and Greases, July 18.

#### MELBOURNE AND METROPOLITAN BOARD OF WORKS.

M.S. Plates, Bars and Sections (approx. 950 tons), July 18.

Vat and Furnace, (400 gall.), July 4.

#### MISCELLANEOUS.

Filtration Plant, for Shepparton Urban Water Trust. Extended to July 4.

#### DEPARTMENT OF RAILWAYS—NEW SOUTH WALES.

TENDERS enclosed in sealed envelopes which must be endorsed "TENDER FOR . . ." addressed to the Commissioner for Railways, 19 York Street, Sydney, will be received on the dates and times shown for service specified. Tenders may be lodged in the Tender Box, Room 504A, 5th Floor, Railway House, 19 York Street, Sydney, or posted to the above address.

Wednesday, 19th July—  
12 noon.

(Extended from the 21st June.)  
For the manufacture, supply, delivery and erection of five (5) Dust Collectors, for Ultimo Power Station, to Specification No. 1252. Tender forms (Specifications, price 5/- each) and further particulars obtainable from Chief Electrical Engineer, 19 York Street, Sydney.

Wednesday, 26th July—  
12 noon.

For the supply of one 35-ton Road Weighbridge for Conoble. Complete sets of plans, specifications and conditions of contract may be purchased at 2/6 per set, or sets may be loaned to contractors for a short period without charge, and tender forms obtained from Chief Civil Engineer, Room 905, 19 York Street, Sydney.

Wednesday, 9th August—  
12 noon.

No tenders necessarily accepted. Make cheques payable to Commissioner for Railways. Any tender unaccompanied by deposit as provided in conditions of contract may be rejected.

S. R. NICHOLAS,  
Secretary for Railways.

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[Page 90, June 24, 1950.]

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| Eristol, R. V., & Co. Pty. Ltd.                  | 27 | Johnston, C. H. R. Pty. Ltd.                      | 45                 | Silverwater Rubber Co. Pty. Ltd.               | 85     |
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| Claude, Neon, Ltd.                               | 21 | Main, T., & Sons, Pty. Ltd.                       | 89                 | Taylor & Wearing                               | 26     |
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| Cohen, Geo. Sons & Co. Ltd.                      | 7  | Martin, G. H., Pty. Ltd.                          | 50                 | Thompson & Williams                            | 68     |
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| Dunkerley Hat Mills Ltd.                         | 2  | Metal Coatings Pty. Ltd.                          | 82                 | Watson, Victor, Ltd.                           | 91     |
| Durst Motor & Electric Industries Pty. Ltd.      | 61 | Metal Products Pty. Ltd.                          | 36                 | Welded Products Ltd.                           | 83     |
| Ebs-Ray Distributors Pty. Ltd.                   | 54 | Miller & Co.                                      | 36                 | Wells, W. H., Pty. Ltd.                        | 59     |
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| F. R. S. Ideal Spring Co. Ltd.                   | 89 | Mote Ladders Pty. Ltd.                            | 23                 | Wolfe, H. S. G., Pty. Ltd.                     | 27     |
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Constructed from a single tube, small in size and of robust build, the NEW miniature Weston standard cell is a great improvement on the H-shaped cell up to now universally adopted. Many fresh applications are made possible, and multiple cell units can now be used without fear of high expense or excessive size. No special form of mounting is necessary.

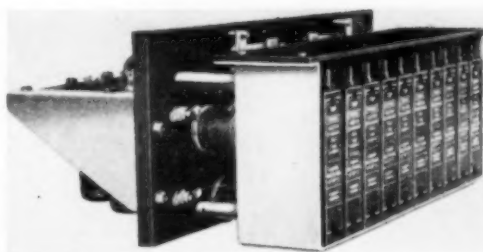
Size:  $\frac{7}{8}$  in. square by  $3\frac{1}{2}$  in. high. Weight: 2.6 ozs.

E.M.F.: 1.01859 volts absolute at 20° C. Temperature Co-efficient: 0.00004/° C. approximately.

### SPECIALIZED APPLICATIONS OF THE MINIATURE STANDARD CELL

The unit illustrated comprises a precision potential divider and Weston cell bank made up for measuring and checking the stability of a 1,100 volt D.C. power supply with an accuracy of 1 part in 5,000 and a stability of 1 part in 10,000. Another application of the new cell is its use (singly or severally) to provide grid bias for the control valve of stabilised H.T. power units.

Other uses will occur wherever a reference standard for potentiometric electrical measurements are required. The cell may be built into an instrument with the knowledge that, if used correctly, it will last for years.



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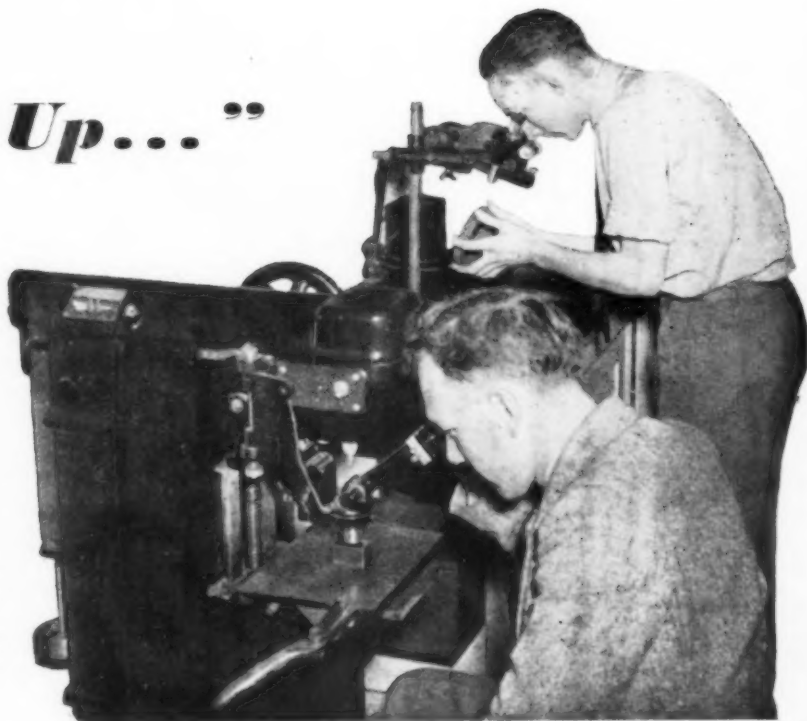


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